DOCUMENT RESUME

ED 299 704 EA 020 445

AUTHOR	Gerald, Debra E.; And Others
TITLE	Projections of Education Statistics to 1997-98.
INSTITUTION	National Center for Education Statistics (ED), Washington, DC.
REPORT NO	CS-88-607
PUB DATE	88
NOTE	155p.; This report supersedes ED 262 472.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (Stock No. 065-000-00356-2": $8.50).
PUB TYPE	Statistical Data (110) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	Degrees (Academic); *Educational Finance; *Educational Trends; Elementary Secondary Education; *Enrollment Trends; Expenditure per Student; Futures (of Society); Government Publications; Graduates; Higher Education; Long Range Planning; National Surveys; *Prediction; *Public Schools; *School Statistics; School Surveys; Statistical Analysis; Statistical Surveys; Tables (Data); Teacher Salaries; Teacher Supply and Demand; Trend Analysis

ABSTRACT

This report, the 18th in a series begun in 1964, provides a set of projections for most key education statistics. The report includes tables, charts, and narratives about data on enrollment, teachers, graduates, and expenditures for the past 15 years and projections for the next 10 years. The report is divided into three parts: (1) Projections and Analyses; (2) Projection Methodology; and (3) Technical Appendixes, which include: (1) supplementary tables; (2) tables of statistical confidence limits for selected projections; (3) a discussion of data sources; and (4) a glossary. (SI)

****

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

****

ED299704

NATIONAL CENTER FOR EDUCATION STATISTICS

PROJECTIONS OF EDUCATION STATISTICS TO 1997–98

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

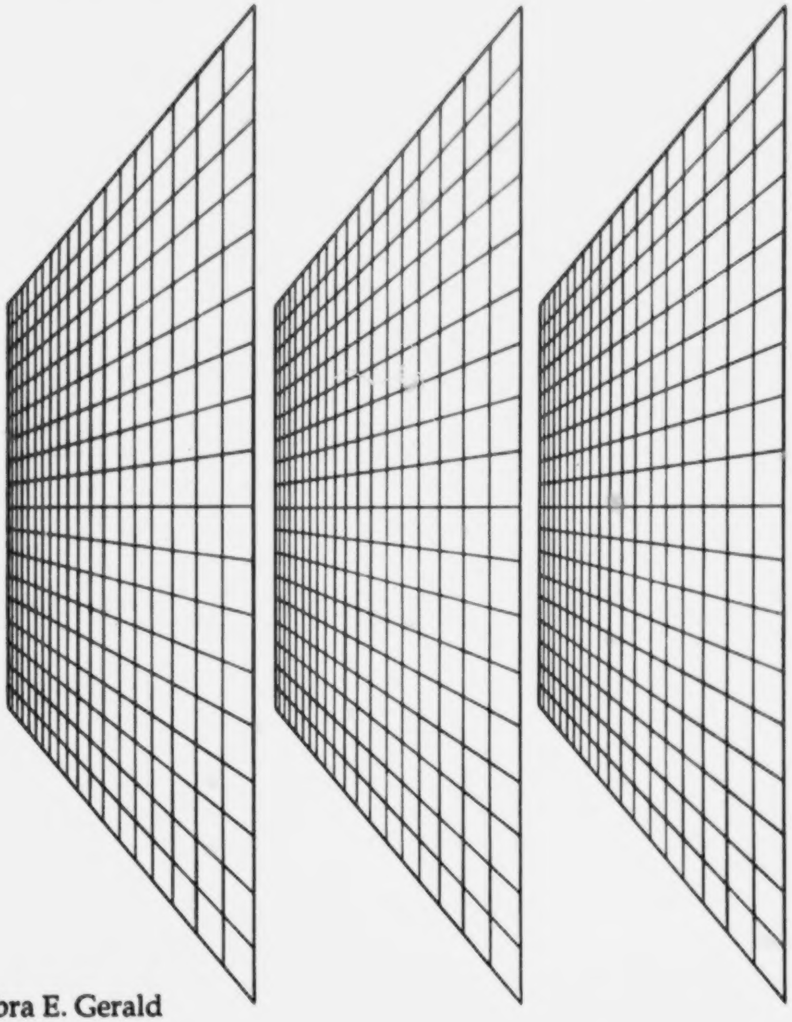
- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

EA 020 445

U.S. Department of Education
Office of Educational Research and Improvement CS 88-602

EA

PROJECTIONS OF EDUCATION STATISTICS TO 1997–98



Debra E. Gerald
Paul J. Horn
William J. Hussar
National Center for Education Statistics

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Foreword

This 1988 edition of *Projections of Education Statistics* is the 18th report in a series begun in 1964. This report provides projections of statistics about elementary and secondary schools and institutions of higher education. Included are data on enrollments, graduates, instructional staff, and expenditures for the 10-year period to 1997-98. The projections in this edition supersede those in *Projections of Education Statistics to 1992-93: Methodological Report with Detailed Projection Tables*, published in 1985.

The report also contains a methodology section describing models and assumptions used to develop these projections. The projections are revisions based on an age-specific enrollment model, time series models, and econometric models. The enrollment model uses population estimates and projections from the Bureau of the Census. The time series models are based on the mathematical projection of past patterns in the data into the future. The econometric models use forecasts of exogenous variables from Data Resources, Inc.'s Macroeconomic Model of the U.S. Economy.

Most of the projections are based on three alternative sets of assumptions. Although the middle projections are the "preferred" set of projections, the other alternatives provide a range of outcomes.

A summary of these projections is available in a pocket-sized folder, *Pocket Projections: 1977-78 to 1997-98.*

Paul R. Hall, Director
Crosscutting Education Statistics and
Analysis Division
September 1988

Acknowledgments

Projections of Education Statistics to 1997-98 was prepared by the National Center for Education Statistics in the Crosscutting Education Statistics and Analysis Division under the supervision of Paul R. Hall, Director.

This report was prepared under the direction of Leo J. Eiden. Debra E. Gerald developed the chapters on enrollments, earned degrees conferred, and instructional faculty, besides being responsible for the overall development of the report. Paul J. Horn prepared the chapters on public high school graduates and public classroom teachers. William J. Hussar prepared the chapter on expenditures in public elementary and secondary schools.

Valuable assistance was provided by the following reviewers: Daniel Hecker, Bureau of Labor Statistics; Felix Lindsay, National Science Foundation; and Vance Grant in Information Services, Mary Batcher, Robert Burton, Dennis Carroll, Charles Cowan, Martin Frankel, William Fowler, Mary Papageorgiou, and John Sietsema, National Center for Education Statistics, U.S. Department of Education.

Patricia Brown helped develop the tables. Celeste Loar produced charts. Carmelita Stevenson and Brenda Wade typed the manuscript. Mary Margaret Hall was the editor and Philip Carr designed the cover.

Highlights

Public Elementary and Secondary Education

- Enrollment in grades K–8 will increase for the rest of the 1980s and into the 1990s, while enrollment in grades 9–12 will decline until 1990, reverse its course, and increase until 1997.

- The number of classroom teachers is projected to increase from 2.3 million in 1987 to 2.6 million in 1997.

- Current expenditures, in constant 1987 dollars, are expected to increase from $146.1 billion in 1986–87 to $201.5 billion in 1997–98, an increase of 38 percent.

Higher Education

- Enrollment in institutions of higher education is projected to increase from 12.5 million in 1987 to 12.6 million by 1990, then decline to 12.2 million by 1997.

- Between 1987 and 1997, enrollment of students under 25 years of age is projected to fall by nearly 600,000, while the enrollment of older students is expected to rise by 217,000.

- The number of associate and bachelor's degrees is expected to decline over the projection period, while master's, doctor's, and first-professional degrees are projected to rise slightly or remain stable.

- By 1997–98, women are expected to be awarded the majority of associate, bachelor's, and master's degrees and more than two-fifths of the doctor's and first-professional degrees.

- The number of instructional faculty is projected to decline from 722,000 in 1987 to 700,000 in 1997.

Contents

Page

Foreword iii

Acknowledgments iv

Highlights v

Introduction 1

Part 1: Projections and Analyses

Chapter 1. Overview, by Debra E. Gerald 5

Chapter 2. Enrollment, by Debra E. Gerald 11

Chapter 3. Public High School Graduates, by Paul J. Horn 47

Chapter 4. Earned Degrees Conferred, by Debra E. Gerald 51

Chapter 5. Public Classroom Teachers, by Paul J. Horn 67

Chapter 6. Instructional Faculty, by Debra E. Gerald 73

Chapter 7. Expenditures of Public Elementary and Secondary Schools, by William J. Hussar 77

Part 2: Projection Methodology

Chapter 8. General Projection Methodology, by Debra E. Gerald 85

Chapter 9. Enrollment—Methodology, by Debra E. Gerald 87

Chapter 10. Public High School Graduates—Methodology, by Paul J. Horn 99

Chapter 11. Earned Degrees Conferred—Methodology, by Debra E. Gerald 101

Chapter 12. Public Classroom Teachers—Methodology, by Paul J. Horn 105

Chapter 13. Instructional Faculty—Methodology, by Debra E. Gerald 109

Chapter 14. Expenditures of Public Elementary and Secondary Schools—Methodology, by William J. Hussar 111

7

Part 3: Technical Appendixes

A. Supplementary Tables 117
B. Tables of Statistical Confidence Limits for Selected Projections 125
C. Data Sources 137
D. Glossary
  Data Terms 143
  Statistical Terms 147

Figures

1. Selected elementary and secondary education statistics 6
2. Selected higher education statistics 7
3. Public high school graduates and earned degrees by level 8
4. Number of annual births, with projections: 1942 to 1997 12
5. Preprimary population, with projections: 1972 to 1997 12
6. School-age populations, with projections: 1972 to 1997 13
7. College-age populations, with projections: 1972 to 1997 13
8. Enrollment in grades K–12 of public schools, with projections: Fall 1972 to 1997 14
9. Public school enrollment, by grade level compared with school-age populations: 1972 to 1997 14
10. Enrollment in institutions of higher education, with alternative projections: Fall 1972 to 1997 15
11. Enrollment in institutions of higher education, by age: 1977, 1987, and 1997 16
12. Enrollment of men in institutions of higher education, by age: 1977, 1987, and 1997 17
13. Enrollment of women in institutions of higher education, by age: 1977, 1987, and 1997 17
14. Enrollment in institutions of higher education, by attendance status, with middle alternative projections: Fall 1972 to 1997 18
15. Enrollment in institutions of higher education, by sex, with middle alternative projections: Fall 1972 to 1997 19
16. Enrollment in institutions of higher education, by type of institution, with middle alternative projections: Fall 1972 to 1997 19
17. Enrollment in institutions of higher education, by control of institution, with middle alternative projections: Fall 1972 to 1997 20
18. Full-time-equivalent enrollment in institutions of higher education, with alternative projections: Fall 1972 to 1997 21
19. Enrollment in institutions of higher education, by level enrolled, with middle alternative projections: Fall 1972 to 1997 21
20. Public high school graduates, with projections: 1972–73 to 1997–98 48
21. Public high school graduates as a percent of the mean number of 17- and 18-year-olds, with projections: 1972–73 to 1997–98 48
22. Associate degrees, with projections: 1972–73 to 1997–98 52

23. Associate degrees awarded to men, with projections: 1972-73 to 1997-98 53
24. Associate degrees awarded to women, with projections: 1972-73 to 1997-98 53
25. Bachelor's degrees, with projections: 1972-73 to 1997-98 54
26. Bachelor's degrees awarded to men, with projections: 1972-73 to 1997-98 55
27. Bachelor's degrees awarded to women, with projections: 1972-73 to 1997-98 55
28. Master's degrees, with projections: 1972-73 to 1997-98 56
29. Master's degrees awarded to men, with projections: 1972-73 to 1997-98 57
30. Master's degrees awarded to women, with projections: 1972-73 to 1997-98 57
31. Doctor's degrees, with projections: 1972-73 to 1997-98 58
32. Doctor's degrees awarded to men, with projections: 1972-73 to 1997-98 59
33. Doctor's degrees awarded to women, with projections: 1972-73 to 1997-98 59
34. First-professional degrees, with projections: 1972-73 to 1997-98 60
35. First-professional degrees awarded to men, with projections: 1972-73 to 1997-98 61
36. First-professional degrees awarded to women, with projections: 1972-73 to 1997-98 61
37. Public classroom teachers, with alternative projections: Fall 1972 to 1997 68
38. Public elementary and secondary teachers, with middle alternative projections: Fall 1972 to 1997 68
39. Public elementary and secondary teachers per 1,000 pupils, with alternative projections: Fall 1972 to 1997 69
40. Instructional faculty in institutions of higher education, with alternative projections: Fall 1972 to 1997 74
41. Current expenditures (constant 1987 dollars) in public schools, with alternative projections: 1972-73 to 1997-98 78
42. Current expenditures per pupil in average daily attendance (constant 1987 dollars) in public schools, with alternative projections: 1972-73 to 1997-98 78
43. Current expenditures per pupil in average daily attendance (constant 1987 dollars) in public schools, with middle alternative projections: 1972-73 to 1997-98 79
44. Average annual salaries of teachers (constant 1987 dollars) in public schools, with alternative projections: 1972-73 to 1997-98 80
45. Average annual salaries of teachers (constant 1987 dollars) in public schools, with middle alternative projections: 1972-73 to 1997-98 80
46. General structure and methodology of the Interactive Forecasting Model (IFMOD) 88

Tables

Part 1: Projections and Analyses

Enrollment

Public Elementary and Secondary Schools

1. Enrollment in grades K-8 and 9-12 of public elementary and secondary schools, with projections: 50 States and D.C., fall 1972 to fall 1997 22
2. Enrollment in public elementary and secondary schools, by organizational level, with projections: 50 States and D.C., fall 1972 to fall 1997 23

Institutions of Higher Education

3. Total enrollment in all institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 24

4. Total enrollment in 4-year institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 25

5. Total enrollment in 2-year institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 26

6. Enrollment in all institutions of higher education, by age, sex, and attendance status, with middle alternative projections: 50 States and D.C., fall 1977, 1982, 1987, 1992, and 1997 27

7. Enrollment in all institutions of higher education, by age, sex, and attendance status, with low alternative projections: 50 States and D.C., fall 1977, 1982, 1987, 1992, and 1997 28

8. Enrollment in all institutions of higher education, by age, sex, and attendance status, with high alternative projections: 50 States and D.C., fall 1977, 1982, 1987, 1992, and 1997 29

9. Total enrollment in all institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 30

10. Total enrollment in public 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 31

11. Total enrollment in public 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 32

12. Total enrollment in private 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 33

13. Total enrollment in private 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 34

14. Undergraduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 35

15. Undergraduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 36

16. Undergraduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 37

17. Graduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 38

18. Graduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 39

19. Graduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 40

20. First-professional enrollment in all institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 41

21. First-professional enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 42

22. First-professional enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 43

23. Full-time-equivalent enrollment in all institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997.......... 44

24. Full-time-equivalent enrollment in public institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 45

25. Full-time-equivalent enrollment in private institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997 .. 46

High School Graduates

26. Public high school graduates, 18-year-old population, and births 18 years earlier, with forecasts: 50 States and D.C., 1972–73 to 1997–98 49

Earned Degrees Conferred

27. Associate degrees, by sex of recipient, with projections: 50 States and D.C., 1972–73 to 1997–98 62

28. Bachelor's degrees, by sex of recipient, with projections: 50 States and D.C., 1972–73 to 1997–98 63

29. Master's degrees, by sex of recipient, with projections: 50 States and D.C., 1972–73 to 1997–98 64

30. Doctor's degrees, by sex of recipient, with projections: 50 States and D.C., 1972–73 to 1997–98 65

31. First-professional degrees, by sex of recipient, with projections: 50 States and D.C., 1972–73 to 1997–98 66

Instructional Staff

Public Elementary and Secondary Schools

32. Classroom teachers and teachers per 1,000 pupils in public elementary and secondary schools, by level of institution, with alternative forecasts: 50 States and D.C., fall 1972 to fall 1997 71

33. Projected demand for new-hiring of classroom teachers in public elementary and secondary schools: 50 States and D.C., fall 1988 to fall 1997 72

Institutions of Higher Education

34. Full-time and part-time instructional faculty in institutions of higher education, by employment status, control, and type of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 1997 75

Expenditures

Public Elementary and Secondary Schools

35. Current expenditures and current expenditures per pupil in average daily attendance in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1972–73 to 1997–98 81

36. Average annual salaries of classroom teachers in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1972–73 to 1997–98 82

Part 2: Projection Methodology

Enrollment

37. Elementary enrollment rates, by age and sex 91

38. Secondary enrollment rates, by age and sex 91

39. College enrollment rates, by age, sex, and attendance status, with alternative projections 92

40. Enrollment rates in public schools 93

41. Public grade retention rates 93

42. Full-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification 94

43. Part-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification 95

44. Public enrollment as a percent of total enrollment, by attendance status, sex, and level enrolled and by type of institution 96

45. Graduate enrollment as a percent of total postbaccalaureate enrollment, by sex and attendance status, and by type and control of institution 96

46. Full-time-equivalent of part-time enrollment as a percent of part-time enrollment, by level enrolled and by type and control of institution 96

47. Equations for selected college enrollment rates of men, by age and attendance status 97

48. Equations for selected college enrollment rates of women, by age and attendance status 97

49. Enrollment (assumptions) 98

50. Enrollment (estimation methods) 98

Earned Degrees Conferred

51. Equations for associate degrees 102

52. Equations for bachelor's degrees 102

53. Equations for master's degrees 103

54. Equations for doctor's degrees 103

55. Equations for first-professional degrees 103

56. Earned degrees conferred (assumptions) 104

Instructional Staff

Public Classroom Teachers

57. Public elementary classroom teacher model: key statistics 107

58. Public secondary classroom teacher model: key statistics 107

Instructional Faculty

59. Faculty-student ratios used to project full-time and part-time faculty 110

60. Instructional faculty (assumptions) 110

61. Instructional faculty (estimation methods) 110

Expenditures

Public elementary and secondary schools

62. Equations for current expenditures per pupil in average daily attendance and average annual salaries of teachers in public elementary and secondary schools 114

Part 3: Technical Appendixes

Appendix A
Supplementary Tables

A1. Annual number of births (U.S. Census Projections, Middle Series): 50 States and D.C., 1942 to 1997 117

A2. Preprimary school-age populations (U.S. Census Projections, Middle Series): 50 States and D.C., 1972 to 1997 118

A3. School-age populations (U.S. Census Projections, Middle Series): 50 States and D.C., 1972 to 1997 119

A4. College-age populations (U.S. Census Projections, Middle Series): 50 States and D.C., 1972 to 1997 120

A5. Average daily attendance in public elementary and secondary schools, the change in average daily attendance, population, and average daily attendance to the population: 50 States and D.C., 1972-73 to 1997-98 121

A6. Revenue receipts from State sources per capita (constant 1987 dollars), with alternative projections: 50 States and D.C., 1972-73 to 1997-98 122

A7. Disposable income per capita (constant 1987 dollars), the all urban consumer price index (base year 1987), and the price deflator for personal consumption expenditures (base year 1987): 50 States and D.C., 1972-73 to 1997-98 123

Appendix B

Tables of Statistical Confidence Limits for Selected Projections

B1. Public high school graduates as a percent of the 18-year-old population, with forecasts and confidence limits: 50 States and D.C., 1972-73 to 1997-98 125

B2. Associate degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 126

B3. Associate degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 127

B4. Bachelor's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 128

B5. Bachelor's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 129

B6. Master's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 130

B7. Master's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 131

B8. Doctor's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 132

B9. Doctor's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 133

B10. Classroom teachers in public elementary and secondary schools, with alternative forecasts and confidence limits: 50 States and D.C., fall 1972 to fall 1997 134

B11. Current expenditures per pupil in average daily attendance (constant 1987 dollars) in public elementary and secondary schools, with alternative projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 135

B12. Average annual salaries of classroom teachers (constant 1987 dollars) in public elementary and secondary schools, with alternative projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98 136

Introduction

This 18th edition of *Projections* provides a consistent set of projections for most key education statistics. This edition includes public elementary and secondary expenditures which haven't been published since 1982. There are tables, charts, and narratives about data on enrollment, teachers, graduates, and expenditures for the past 15 years and projections for the next 10 years. *Projections* is in three parts: Part 1—Projections and Analyses; Part 2—Projection Methodology; and Part 3—Technical Appendixes.

Limitations of Projections

Projections of time series usually differ from the reported data due to errors from many sources. This is because of the inherent nature of the statistical universe from which the basic data are obtained and the properties of projection methodologies, which depend on the validity of many assumptions. Therefore, alternative projections are shown for most statistical series to denote the uncertainty involved in making projections. These alternatives are not statistical confidence limits, but instead represent judgments made by the authors as to reasonable upper and lower bounds. To measure projection reliability, upper and lower statistical confidence limits are presented for alternative projections of public classroom teachers, public high school graduates, earned degrees conferred, and public expenditures in elementary and secondary schools. Statistical confidence limits are not provided for projections of enrollments and instructional faculty. Because of the complex methodologies used, procedures will need to be developed to calculate statistical confidence limits.

Future Improvements

This edition does not include projections for (1) private school statistics; (2) teacher supply; and (3) the areas of capital outlay and interest expenditures in elementary and secondary schools and higher education expenditures. Private school statistics and teacher supply need more data and model development. The lack of consistent time series data on private school statistics prevents an adequate analysis. The areas of elementary and secondary expenditures for capital outlays and interest and higher education expenditures need further model development. The National Center for Education Statistics (NCES) is exploring options to address these concerns.

Private School Statistics

Information on projections of private school statistics is a major concern to education policymakers. No consistent, reliable time series data exist for projecting enrollment, high school graduates, or classroom teachers in private elementary and secondary schools. Also, no regular survey exists for the collection of data on private elementary and secondary expenditures. Although projections of private school statistics are not in this edition, recent data on these schools are available in several NCES bulletins from the 1985 "Private School Survey." NCES is conducting a survey of private schools that will yield the data needed to develop projections of private school statistics.

Teacher Supply

Teacher supply and demand are important to educational planners and policymakers. Changing populations and enrollment trends, reports of an aging teaching force, and declining numbers of teacher graduates have fueled speculation about an impending national teacher shortage. NCES and the National Science Foundation commissioned the National Research Council to convene a panel to evaluate data and models on teacher supply and demand. The panel released a report in February 1987 entitled *Toward Understanding Teacher Supply and Demand: Priorities for Research and Development*. The report assesses current data and models on teacher supply and demand, suggests improvements in models and data, and indicates research activities needed to enhance the model structures and supporting data. The report states that NCES models are adequate on the demand side, but supply models and data are inadequate. To remedy this, NCES is conducting a series of schools and staffing surveys to collect statistics on both demand and supply. Until sufficient data are available, projections cannot be made of teacher supply. In the area of demand projections, NCES conducted research to develop a model to project the number of teachers. The teacher demand projections in chapter 5 use such a model.

Expenditures

Projections of expenditures in educational institutions have not been published by NCES since 1982. The absence of national expenditure projections created a void in education statistics. This report includes projections of current expenditures and average annual teacher salaries in public elementary and secondary schools. However, capital outlays and interest in public elementary and secondary schools and expenditures of institutions of higher education are not presented. These areas require further model development and will be in future editions.

Part 1: Projections and Analyses

Chapter 1

Overview

During the past four decades, demographic changes profoundly affected American education. At the elementary and secondary level, the baby-boom caused enrollments to increase in the 1950s and 1960s, followed by a decline in the 1970s as birth rates fell. Declines continued into the early 1980s, followed by steady increases from the mid-1980s to the late 1980s. At the higher education level, the baby-boom generation produced a rapid expansion in college enrollment from the mid-1960s through most of the 1970s. Enrollment peaked in the mid-1980s, remained stable for a few years and is increasing again in the late 1980s. During the 1990s, demographic changes will continue to affect American education.

Public Elementary and Secondary Education

Enrollment

Enrollment changes in public elementary and secondary schools reflect changes in the school-age population. Public elementary and secondary enrollment increased rapidly in the 1960s and then decreased in the 1970s and early 1980s. It rose again in the mid- to late-1980s in response to changing birth rates. In the 1990s, enrollment is expected to continue rising (figure 1).

Enrollment projections for the 1990s indicate enrollment will increase into the late 1990s. Enrollment in grades K–8 will continue to increase for the rest of the 1980s and into the 1990s. However, enrollment in grades 9–12 will continue to decline until 1990, then reverse course and increase until 1997. So, school officials will be faced with higher enrollments in the next decade. Projections indicate that enrollments are expected to approach, but not reach, the peak attained in 1971.

Classroom Teachers

In the 1970s and early 1980s, decreases in enrollment were accompanied by increases in the number of classroom teachers in public elementary and secondary schools. The number of teachers continued rising into the late 1970s due, in part, to the increased staffing needs of special and bilingual education programs. The number of teachers then declined until 1983. After 1983, the number of classroom teachers increased to an all-time high of 2.3 million in 1987. The number is expected to continue rising to the late 1980s and into the 1990s, reaching 2.6 million by 1997.

High School Graduates

The number of public high school graduates peaked in 1976–77 at 2.84 million (figure 3). Then, the number of graduates fell to 2.38 million in 1985–86, followed by a slight rise to 2.43 million in 1986–87. An increase to 2.54 million is expected by 1988–89. After 1988–89, the number of public high school graduates is expected to decrease to 2.24 million by 1991–92 and then increase to 2.55 million by 1997–98.

Current Expenditures and Teacher Salaries

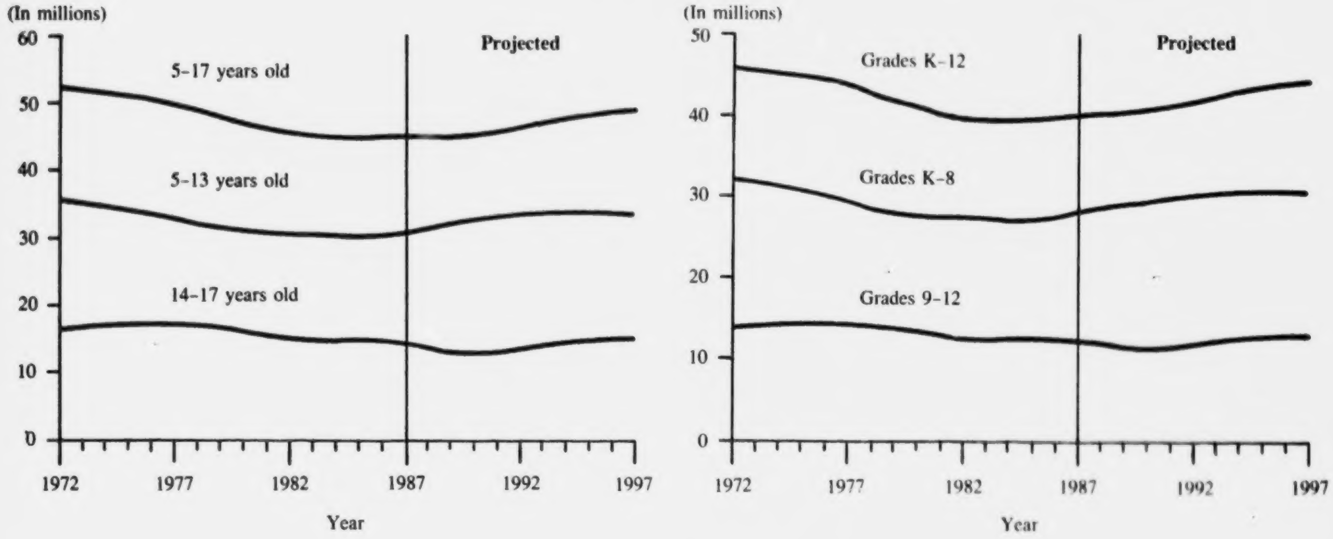
Current expenditures (in constant 1987 dollars) rose steadily over the past 15 years, rising from $118.1 billion in 1972–73 to $146.1 billion in 1986–87, an increase of 24 percent. The level of current expenditures is expected to rise to $201.5 billion by 1997–98. In contrast, teacher salaries declined from $26,051 in 1972–73 to $22,049 in 1979–80 in constant 1987 dollars, a decrease of 15 percent. Since then, teacher salaries have increased steadily, reaching $26,704 in 1986–87. By 1997–98, the average teacher salary is forecast to be $31,856, an increase of 19.3 percent from 1986–87.

Higher Education

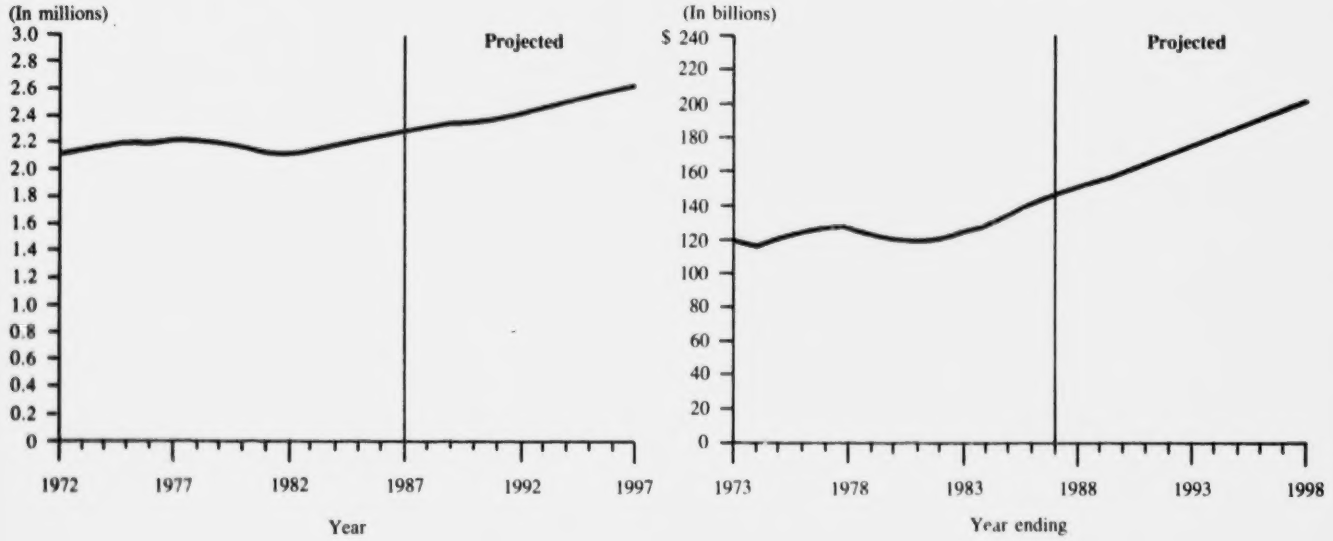
College-Age Population and Enrollment

Unlike enrollment changes in elementary and secondary schools, changes in enrollment in institutions of higher education (4-year and 2-year colleges and universities) are

Figure 1.—Selected elementary and secondary education statistics

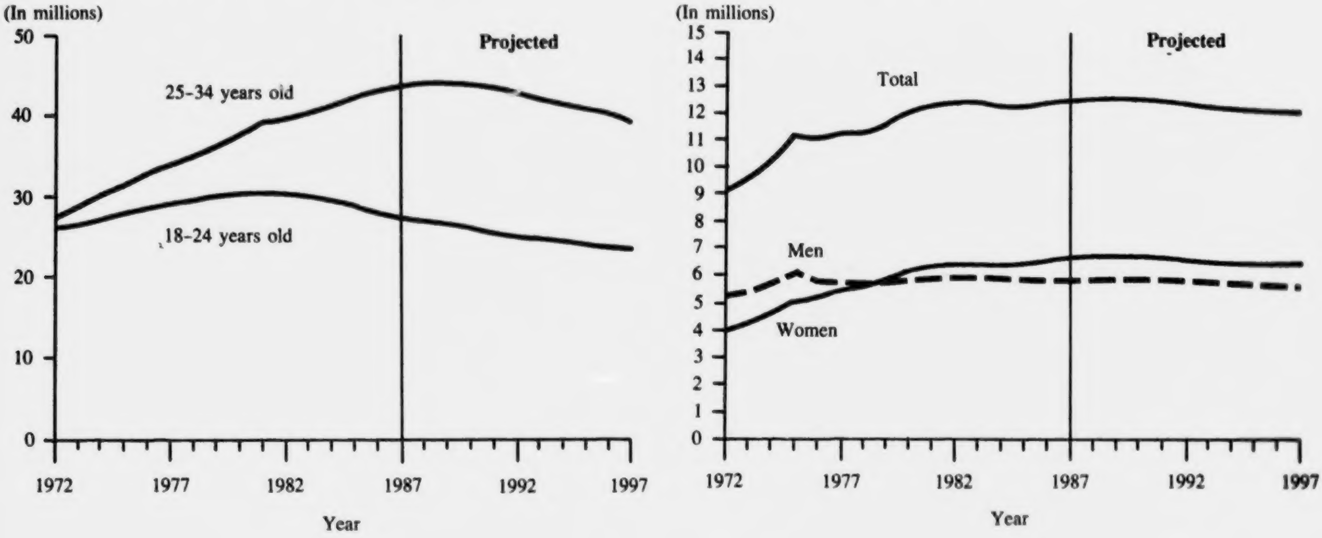

School-age populations begin to increase again

. . . causing public elementary and secondary enrollments to rise.


The demand for classroom teachers increases.

Current expenditures (in constant 1987 dollars) continue to rise.

Figure 2.—Selected higher education statistics


College-age populations rise and then fall.

College enrollment fluctuates.

Instructional faculty stabilizes and then declines.

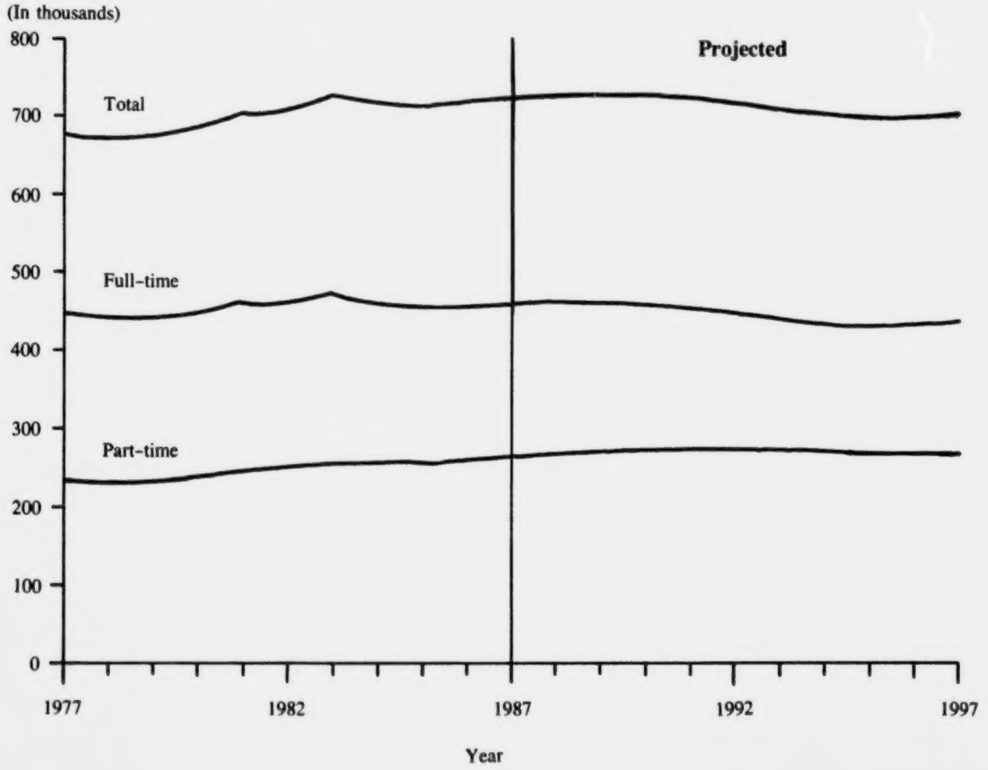
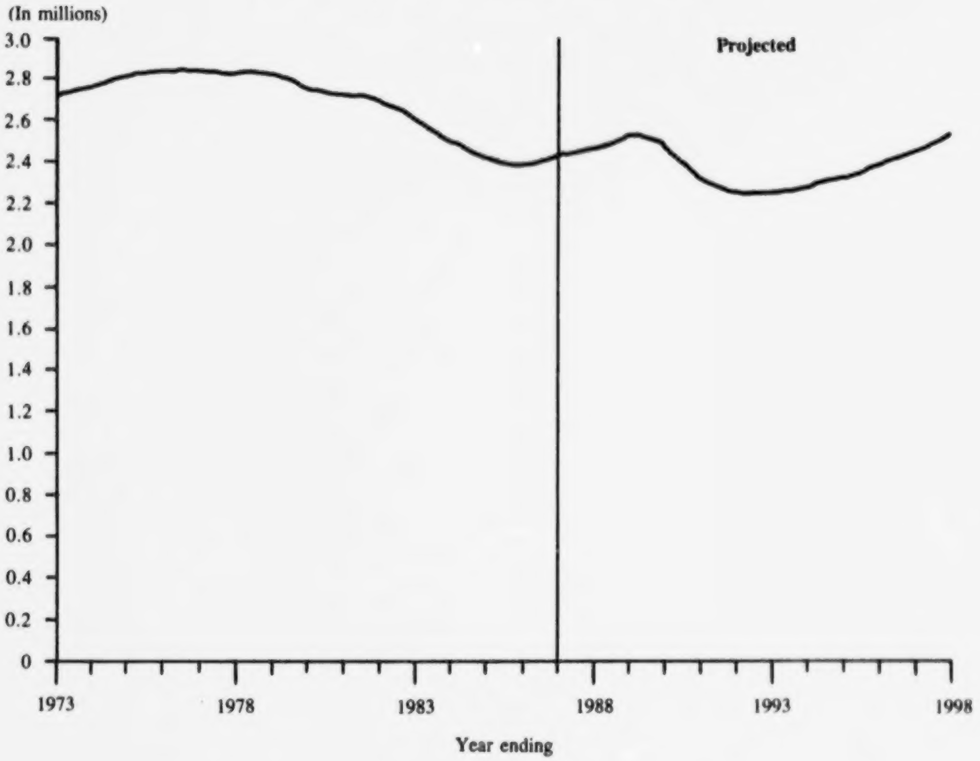


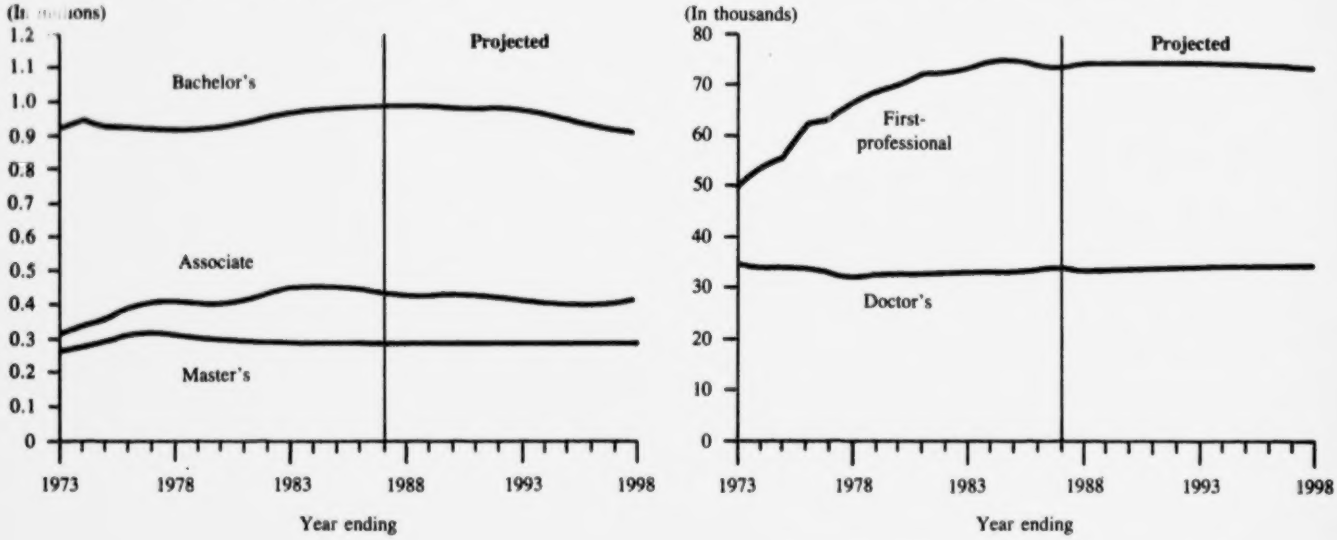
Figure 3.—Public high school graduates and earned degrees by level

The number of public high school graduates fluctuates.



Associate and bachelor's degrees decline, while master's degrees remain stable.

Doctor's and first-professional degrees increase slightly or remain stable.



not affected by population shifts alone. Higher education enrollments are affected by economic conditions, political and administrative decisions, the perceived value of a degree, the intrinsic value of higher education, and college costs. Some of these are impossible to quantify. Although in the past higher education has drawn its participants primarily from the pool of 18- to 24-year-olds, higher education no longer comprises only the younger population. Between 1972 and 1981, the number of 18- to 24-year-olds rose from 26.1 million to 30.4 million, increasing 17 percent (figure 2). The number then decreased to 27.4 million in 1987. By 1997, the population is projected to decline to 24 million, a decline of 12 percent from 1987. This decline in the traditional college-age population is expected to have an effect on enrollment levels in higher education.

Similarly, decreases in the populations of certain older age groups are expected over the projection period. Between 1972 and 1987, the number of 25- to 29-year-olds increased by 45 percent. This age group is projected to decline in number to 18.8 million by 1997, decreasing 15 percent from 1987. The 30- to 34-year-old population, which increased 73 percent between 1972 and 1987, is projected to decrease a moderate 3 percent from 1987 to 1997. In contrast, the 35- to 44-year-old population is projected to increase 27 percent between 1987 and 1997, a result of the baby-boom generation having moved into this age group.

Although the traditional and older college-age populations are projected to decline, enrollment will increase gradually until 1990. The rise will come from increasing enrollment rates of students under 25 years old, women, part-time students, and older students. After 1990, college enrollment is projected to decline when the increasing number of older students no longer offsets the declines in the enrollment of younger students.

Earned Degrees Conferred

The growth in earned degrees overall is due to the substantial rise in the number of degrees awarded to women. In 1986–87, women were awarded the majority of associate, bachelor's, and master's degrees and one-third of the doctor's and first-professional degrees. By 1997–98, women are expected to receive 50 percent or more of the associate, bachelor's, and master's degrees. The proportion of doctor's degrees awarded to women is expected to approach 50 percent and more than 40 percent of all first-professional degrees will be awarded to women.

Instructional Faculty

From 1975 to 1987, public and private instructional faculty increased faster than enrollment, 15 percent versus 12 percent. Instructional faculty is projected to increase slightly from 722,000 in 1987 to 726,000 in 1990, before decreasing to 700,000 by 1997.

Chapter 2

Enrollment

For the rest of the 1980s and into the 1990s, enrollment will increase in public elementary and secondary schools. The primary reason is the rising number of annual births since 1977—referred to as the baby-boom echo (figure 4). This surge of births will cause increases in the preprimary and 5- to 17-year-old populations over the next 10 years (figures 5 and 6). These population increases, which began in 1985, are expected to continue the growth in elementary enrollment in the late 1980s and spur growth in secondary schools in the 1990s. The resulting enrollment boom will approach, but not reach, the peak attained in 1971. School systems will face new demands as public schools that contended with declining enrollments in the 1970s must now prepare again for increasing numbers of elementary and secondary students.

Enrollment in institutions of higher education is expected to increase moderately through 1990 and then gradually decline until 1996. It will increase again in 1997. The gradual decline reflects the decrease in the traditional college-age population (18- to 24-year-olds), the 25- to 29-year-old population, and the 30- to 34-year-old population over the next 10 years (figure 7). But enrollment is expected to increase slightly until 1990 because of rising enrollment rates of 18- to 21-year-olds and increasing enrollment of older and part-time students.

Public Elementary and Secondary Schools

Enrollment in public elementary and secondary schools grew rapidly during the 1950s and 1960s and peaked in 1971 (table 1 and figure 8). From 1971 to 1983, enrollment decreased steadily, reflecting the decline in the school-age population. After reaching a low of 39.3 million in 1984, enrollment reversed its downward trend and increased to 40.2 million in 1987. By 1997, enrollment is projected to continue to increase and reach 44 million, an increase of 3.8 million over 10 years.

Grade Group[1]

Enrollment trends in elementary and secondary schools are expected to differ through 1990 as enrollment continues to increase in grades K-8 and decline in grades 9-12. Enrollment in grades K-8 decreased to 26.9 million in 1984. As the offspring of the baby-boom generation began school, K-8 enrollment rose to 28 million in 1987 and is projected to rise to 30.8 million by 1997, an increase of 10 percent from 1987. Since enrollment rates for most of the school-age population are all close to 100 percent, enrollment in grades K-8 reflects changes in the size of the 5- to 13-year-old population (figure 9).

Enrollment in grades 9-12 shows a different pattern. After peaking in the late 1970s, grades 9-12 enrollment began to decline. Between 1980 and 1987, enrollment in grades 9-12 decreased 8 percent and is expected to decrease another 7 percent between 1987 and 1990. After reaching a low of 11.4 million in 1990, grades 9-12 enrollment is expected to rise to 13.2 million by 1997, an 8 percent increase from 1987 and 16 percent increase from 1990. This pattern tends to reflect changes in the 14- to 17-year-old population (figure 9).

Organizational Level[2]

Enrollment in elementary schools decreased in the late 1960s and throughout the 1970s to 23.8 million in 1981 (table 2). This number increased to 25.1 million by 1987. The increase is expected to continue through 1996, when enrollment will reach 27.4 million and then decline to 27.3 million in 1997. The reported enrollment in elementary schools is smaller than enrollment in kindergarten through grade 8 because it excludes enrollment in grades 7 and 8 in junior high schools.

Enrollment in secondary schools increased from the late 1960s to 19.2 million in 1975. Secondary enrollment then declined to 15.1 million in 1987. This number is expected

---

[1] Includes enrollment in grades K-8 and 9-12.

[2] Includes enrollment in schools organized as elementary and secondary.

Figure 4.—Number of annual births, with projections: 1942 to 1997

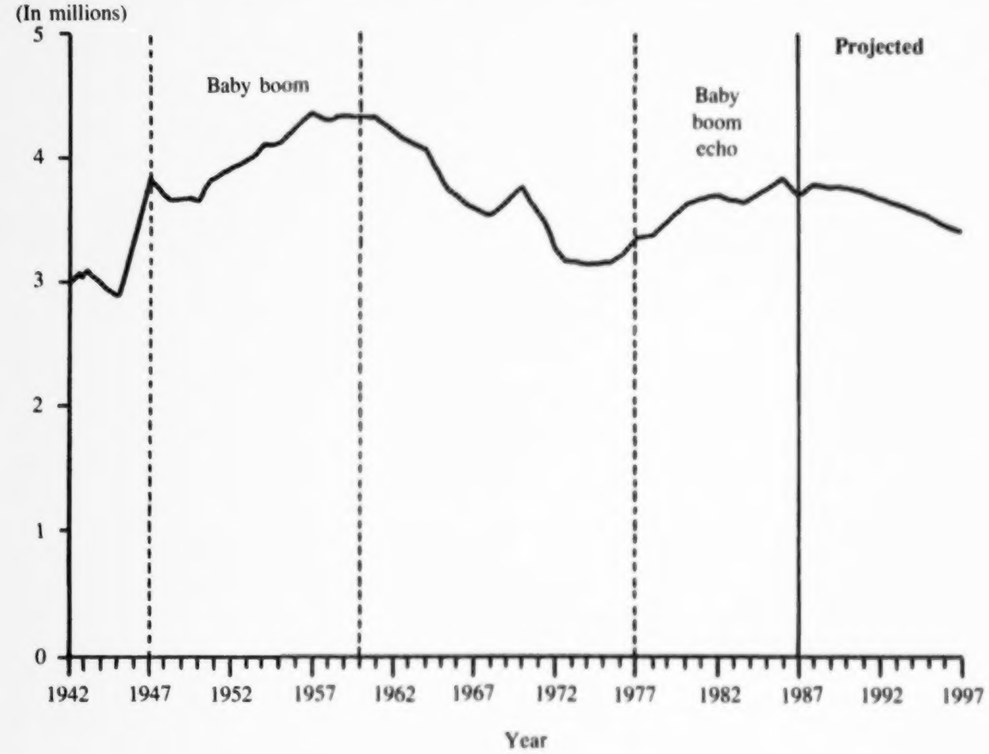


Figure 5.—Preprimary population, with projections: 1972 to 1997

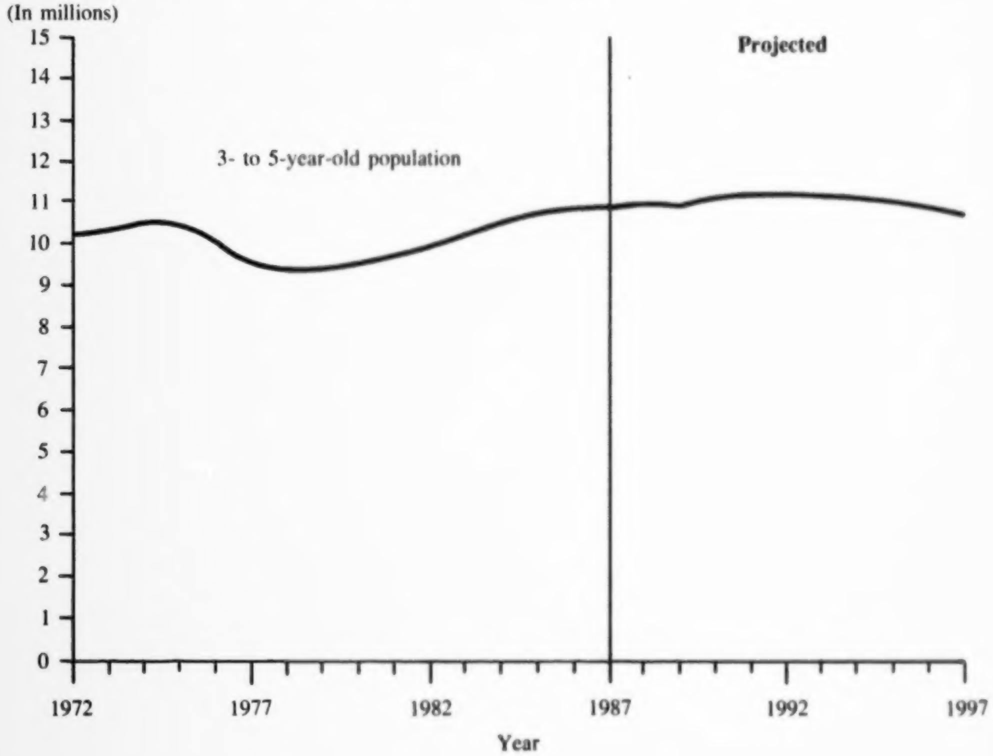


Figure 6.—School-age populations, with projections: 1972 to 1997

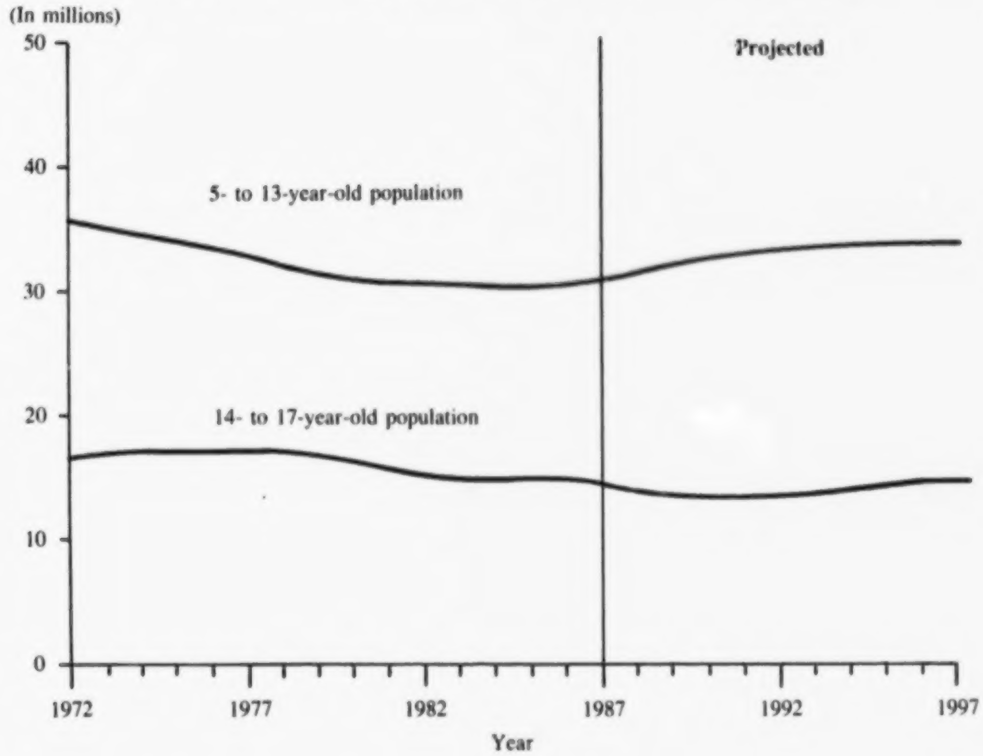


Figure 7.—College-age populations, with projections: 1972 to 1997

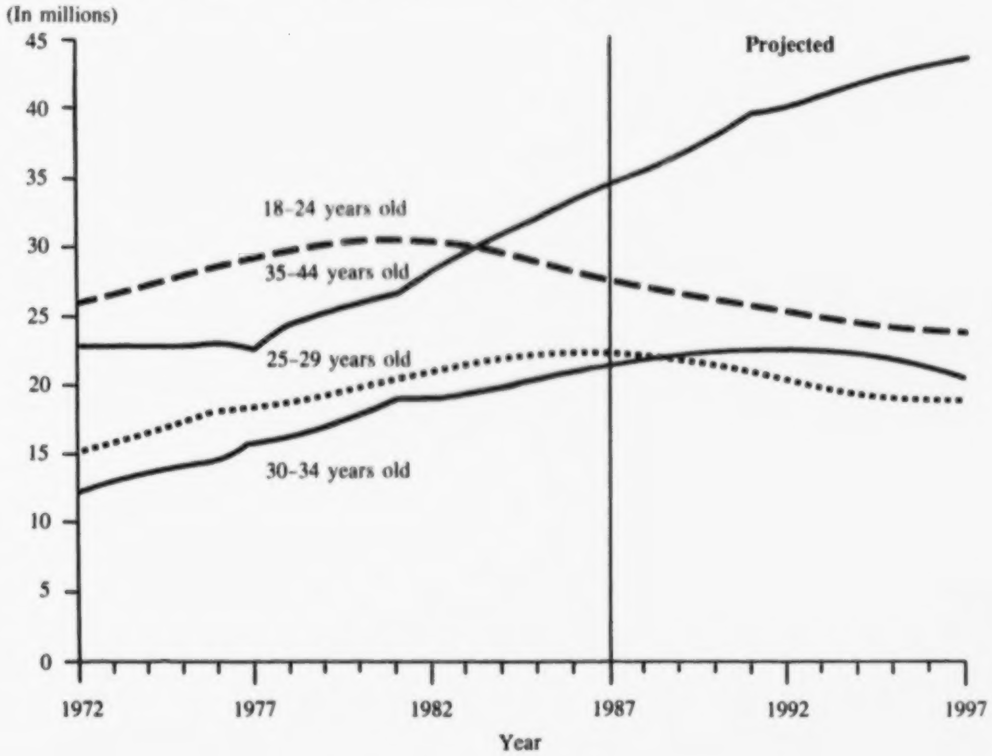


Figure 8.—Enrollment in grades K-12 of public schools, with projections: Fall 1972 to 1997

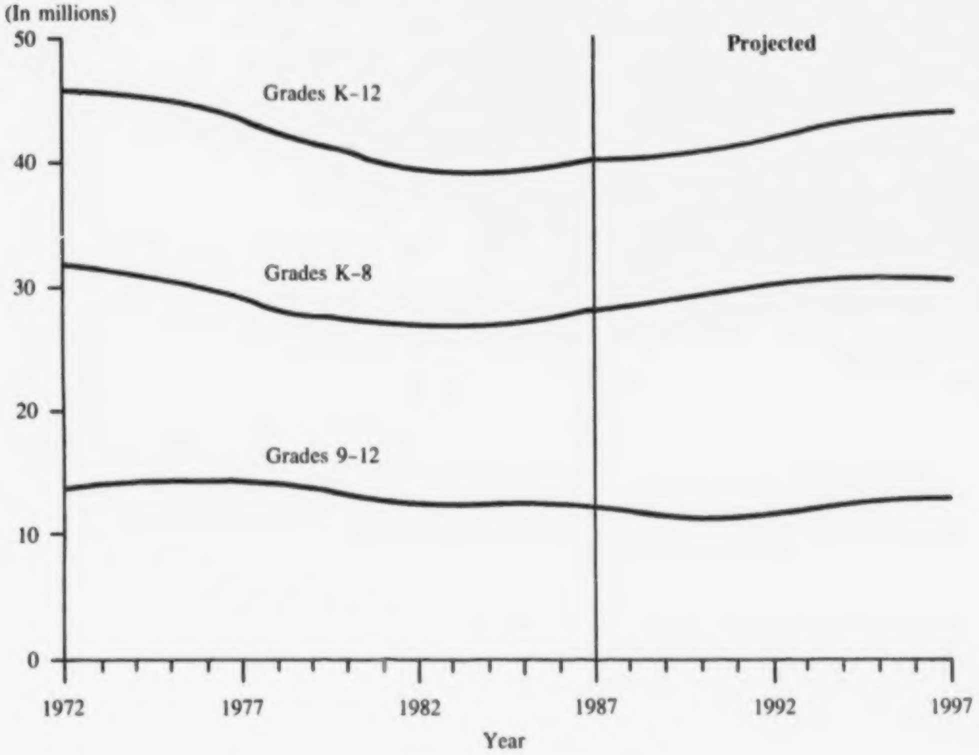


Figure 9.—Public school enrollment, by grade level compared with school-age populations: 1972 to 1997

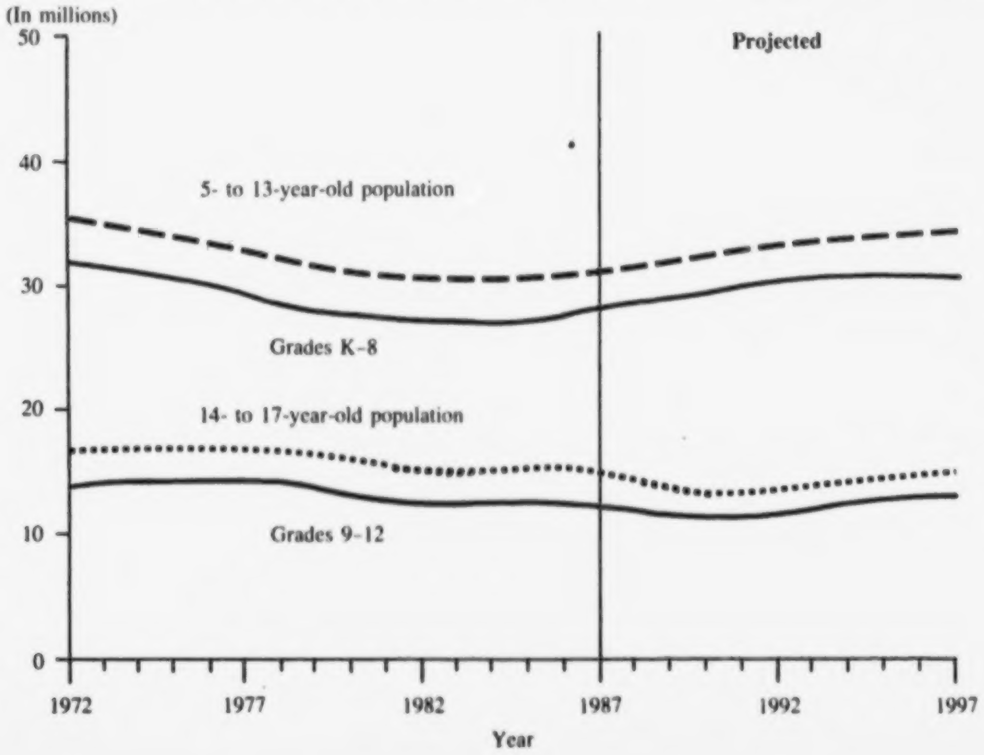
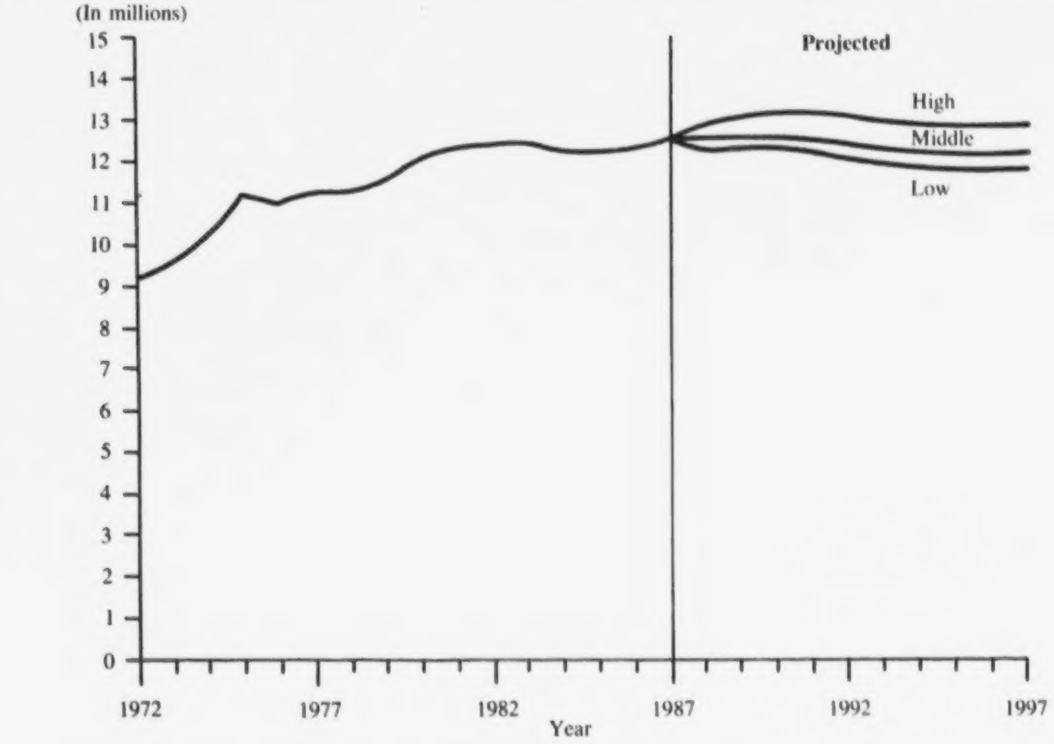


Figure 10.—Enrollment in institutions of higher education, with alternative projections: Fall 1972 to 1997



to continue decreasing to 14.5 million in 1990, before climbing to 16.6 million in 1997, a 10 percent increase over 1987 and 15 percent increase from 1990. The enrollment in secondary schools is larger than that in grades 9–12 because it includes all the enrollment in grades 9–12 and the enrollment in grades 7 and 8 in junior high schools.

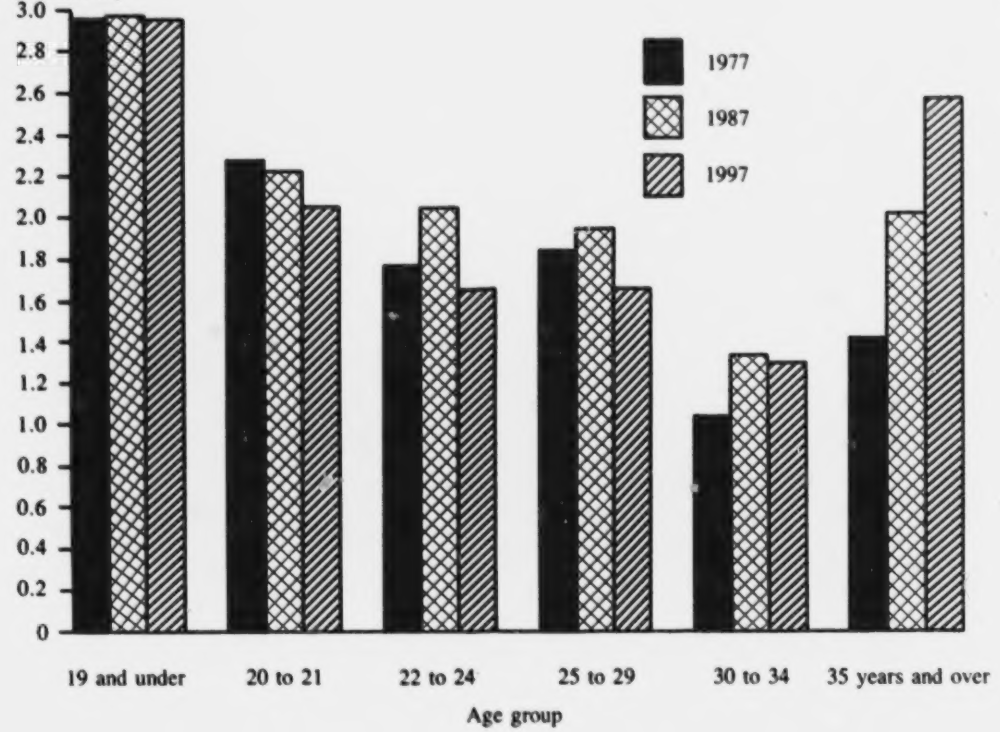
As with past national enrollment patterns, the Nation will not have uniform growth in all regions, States, and communities. Growth rates will vary from State to State. One-year forecasts of enrollment at the regional and State levels have been developed by NCES. They indicate the West will have the greatest growth, with Arizona, Nevada, and California having the largest growth rates. The South will follow with a moderate increase. Mississippi, Florida, and Texas will show the largest growth rates among the Southern States. The Midwest will have no significant change overall. However, Michigan and Iowa are expected to show decreases, while Kansas and South Dakota will have small increases in enrollment. The Northeast is expected to lose enrollment. Enrollment declines are expected in New Jersey, Pennsylvania, and New York.

Higher Education Enrollment

The past 15 years was a period of considerable change in higher education. Enrollment rose from 8.5 million in 1970 to 11.2 million in 1975, an increase of 30 percent. In the late 1970s and early 1980s, older students, primarily women and part-time students, began to enroll in greater numbers. As a result, college enrollment increased to 12.5 million in 1983 (table 3 and figure 10). In 1984 and 1985, enrollment declined to 12.2 million. By 1987, it returned to 12.5 million, exceeding its previous level attained in 1983. College enrollment is projected to rise to 12.6 million in 1990 and then fall to 12.1 million in 1996, before rising slowly to 12.2 million in 1997, a decrease of 3 percent from 1987. The middle alternative assumes that age-specific enrollment rates of the younger age groups will increase over the projection period. Enrollment rates of other age groups are expected to remain constant.

The college enrollment decline of 3 percent between 1987 and 1997 will be less than the 12 percent expected reduction in the 18- to 24-year-old population. The rising enrollment rates of the younger age groups and the continued increases in older student enrollment are expected to compensate for the expected fewer numbers of younger students. Contrary to expectations, the participation rates of the younger age groups have been rising since the early 1980s. Between 1988 and 1990, there also may be small increases in enrollment, as the growth in the number of older students offsets fewer students under 25 years of age. Also, the expected increase in part-time students will offset to some extent the decrease in full-time enrollment.

Figure 11.—Enrollment in institutions of higher education, by age: 1977, 1987, and 1997



Under the low alternative, college enrollment is projected to decrease from 12.5 million in 1987 to 11.8 million in 1997. This alternative assumes that age-specific enrollment rates will remain at the 1986 levels. In contrast, college enrollment is expected to reach 13.1 million in 1991 and remain fairly stable at 12.9 million under the high alternative. This alternative assumes that age-specific enrollment rates for younger and older age groups will increase over the projection period. These high levels are expected to be maintained during the 1990s if the enrollment rates of the younger age groups remain above their 1986 levels and increased enrollment of older students offsets the enrollment declines of younger students.

Enrollment by Age

Enrollment in institutions of higher education is expected to rise moderately to 12.6 million in 1990 and decline to 12.2 million in 1997, although the traditional college-age population (18- to 24-year-olds) is projected to decrease 12 percent over the next decade.

As a result, the college enrollment of students under 25 is expected to decrease by nearly 600,000 between 1987 and 1997. But the increased enrollment of older students is expected to offset declines in the enrollment of younger students, resulting in slight growth in the late 1980s and moderate decline in the 1990s (figures 11, 12, and 13). By 1997, older students are expected to account for 45 percent of the 12.2 million students enrolled, compared with 42 percent in 1987 and 38 percent in 1977.

The alternative projections of college enrollments by age, sex, and attendance status are in table 6 (middle alternative projections), table 7 (low alternative projections), and table 8 (high alternative projections). Under the middle assumption, the period from 1977 to 1997 will be one of unprecedented changes in the characteristics of college students. This middle alternative shows that between 1977 and 1997, the number of students under 25 years old will decrease from 62 percent to 55 percent. Men composed 51 percent of the students in 1977 and their numbers are expected to remain stable at 47 percent in 1997. Full-time enrollment, which was 60 percent in 1977, is expected to decrease to 55 percent in 1997. These projections are based on the assumption that a higher number of older students will be attending college and that these students will be primarily enrolled part-time.

Since older students are more likely to enroll part-time than younger students, increases in part-time enrollment have paralleled increases in older students through 1987

Figure 12.—Enrollment of men in institutions of higher education, by age: 1977, 1987, and 1997

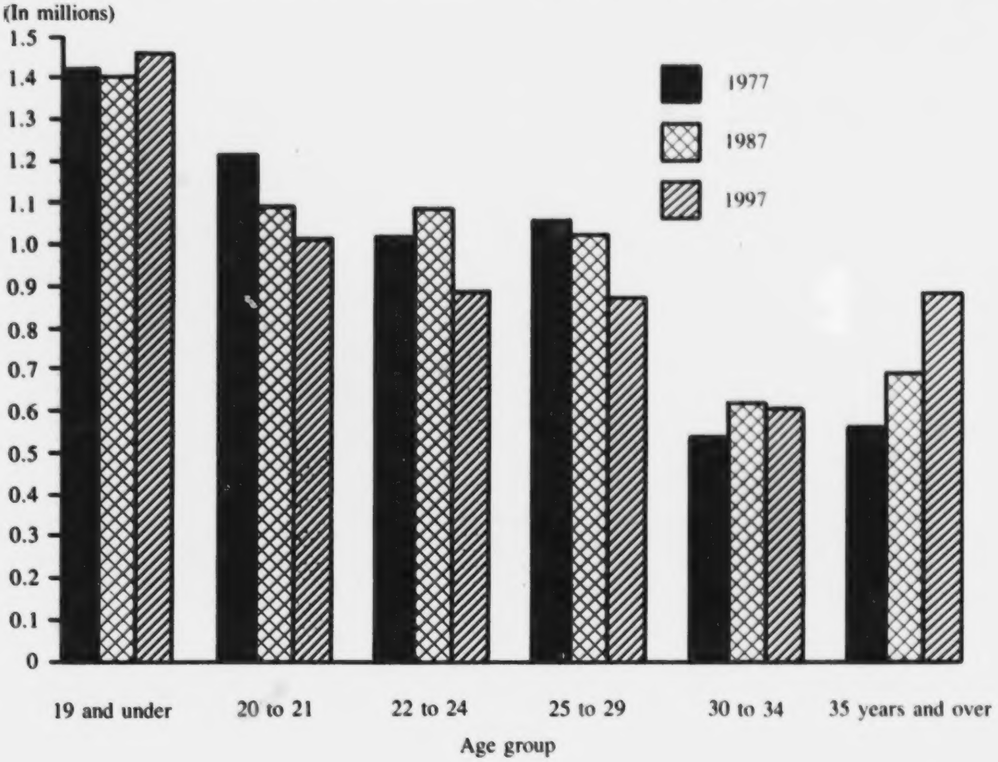
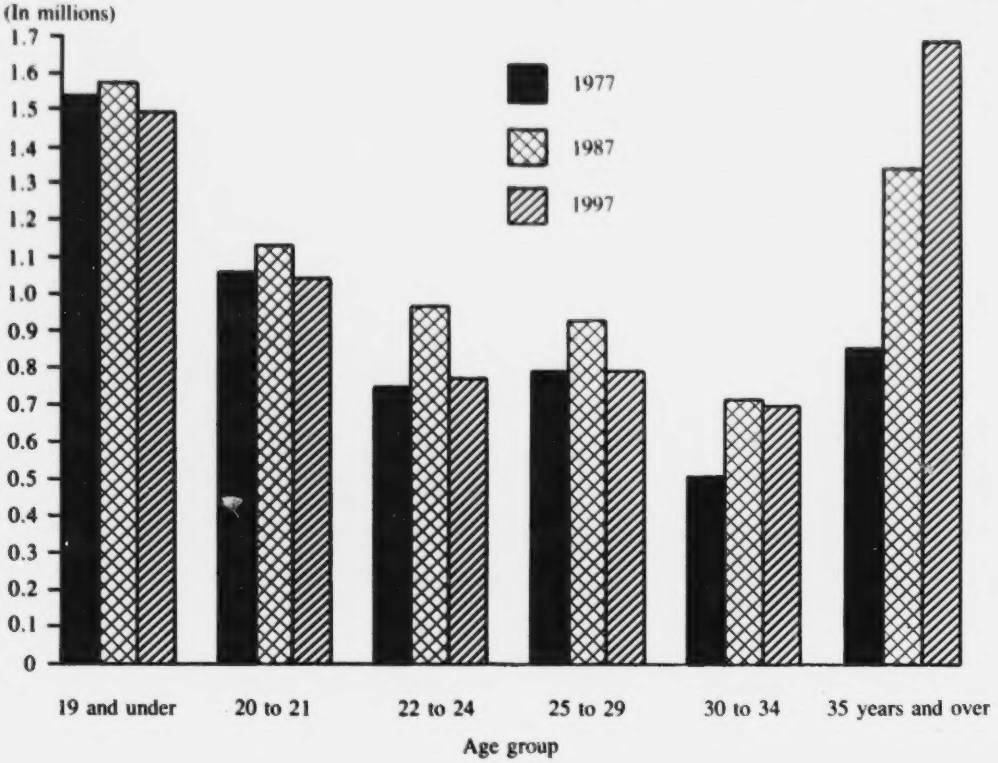


Figure 13.—Enrollment of women in institutions of higher education, by age: 1977, 1987, and 1997



and are expected to continue in the 1990s. Part-time enrollment accounted for 40 percent of all college enrollment in 1977, 42 percent in 1987, and is expected to reach 45 percent in 1997 (figure 14).

Besides older and part-time students, women played a major role in the 1.3 million enrollment increase between 1977 and 1987. Of that number, 93 percent was the increased enrollment of women. As a result, women were 53 percent of all college enrollment in 1987 compared with only 49 percent in 1977. Women are expected to maintain their majority at 53 percent in 1997 (figure 15).

The high and low alternative projections are also shown, along with the middle alternative, to indicate the uncertain trends in enrollment rates of men and women. The low alternative shows a decrease from 12.5 million in 1987 to 11.8 million in 1997. Men and full-time students are expected to account for most of this decrease. Under this alternative, the enrollment of men is expected to fall from 5.9 million in 1987 to 5.5 million in 1997, and full-time enrollment is expected to fall from 7.2 million to 6.4 million.

Under the high alternative, college enrollment is expected to rise from 12.5 million in 1987 to 13.1 million in 1991 and then fall to 12.9 million in 1997. Full-time enrollment will decrease slightly from 7.2 million to 7 million and part-time enrollment will increase from 5.3 million to 5.8 million.

Enrollment by Type of Institution

The projections of enrollment in 4-year and 2-year colleges and universities are based on the assumption that the number of older students will increase, partially offsetting the expected decline in traditional college-age students, and that increasing proportions of these older students will be part-time.

As table 4 shows, enrollment in 4-year institutions increased from 6.5 million in 1972 to 7.8 million in 1987 (figure 16). The number is expected to remain stable at 7.9 million through 1990 before declining to 7.6 million in 1997. Table 5 shows that enrollment in 2-year institutions rose from 2.8 million in 1972 to 4.7 million in 1987 and then is expected to decrease to 4.6 million in 1997. Part-time enrollment in 2-year institutions increased from 1.42 million in 1972 to 3 million in 1987 and will decline to 2.9 million in 1997. Full-time enrollment in 2-year institutions rose from 1.34 million in 1972 to 1.76 million in 1987. By 1997, this number is expected to fall to 1.68 million.

Figure 14.—Enrollment in institutions of higher education, by attendance status, with middle alternative projections: Fall 1972 to 1997

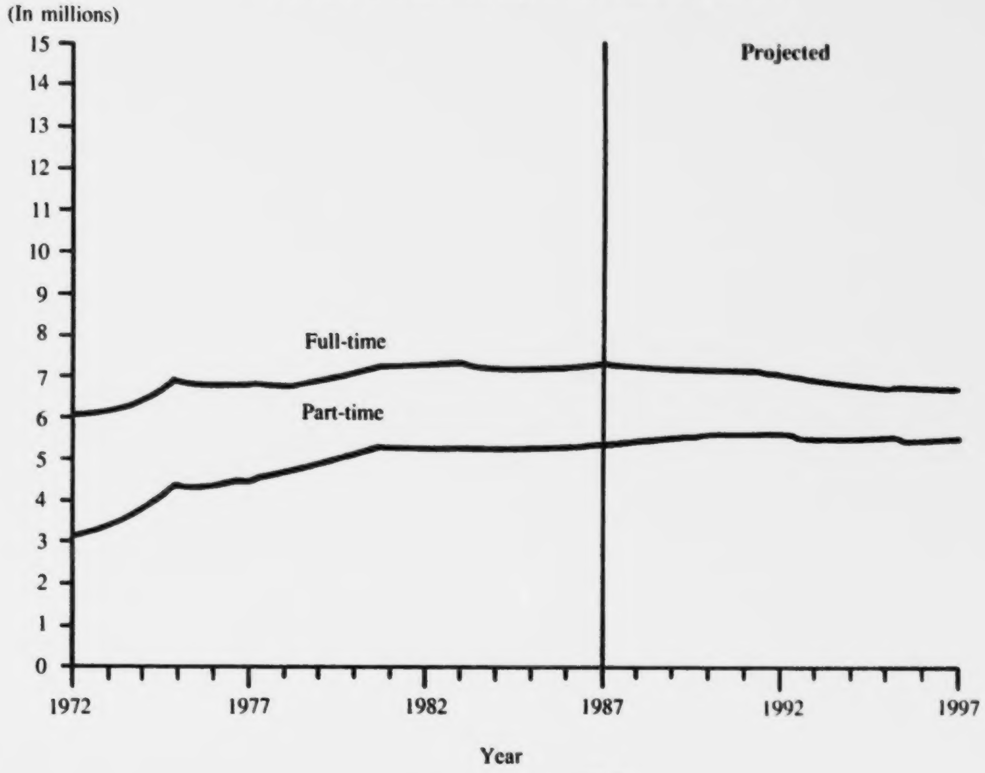


Figure 15.—Enrollment in institutions of higher education, by sex, with middle alternative projections: Fall 1972 to 1997

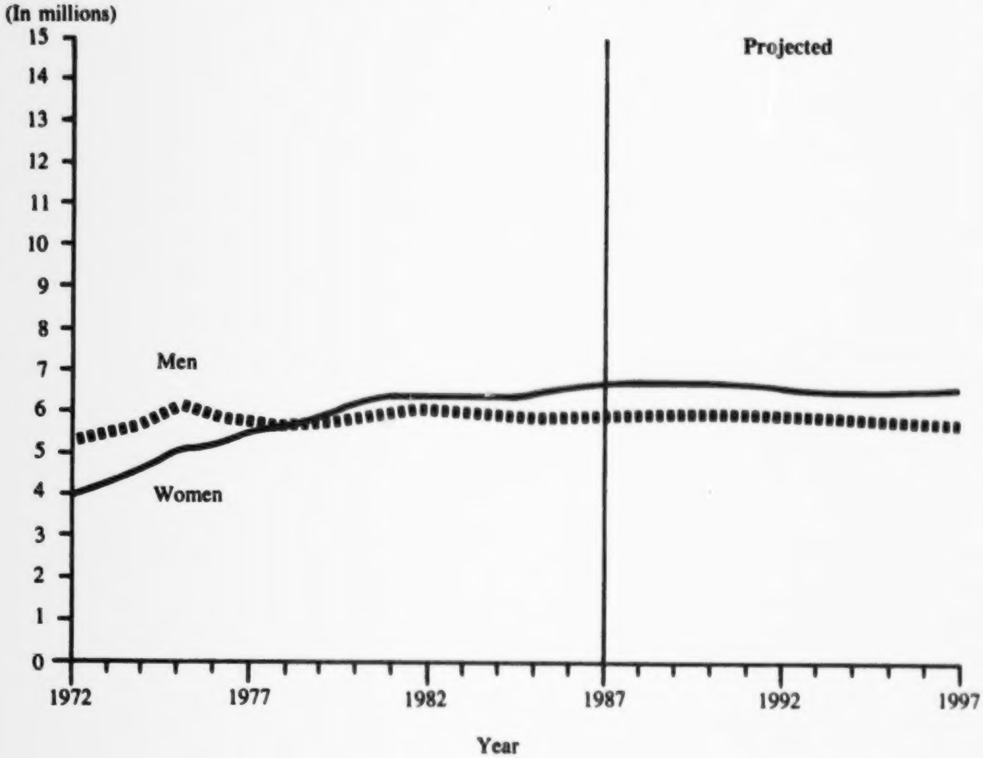


Figure 16.—Enrollment in institutions of higher education, by type of institution, with middle alternative projections: Fall 1972 to 1997

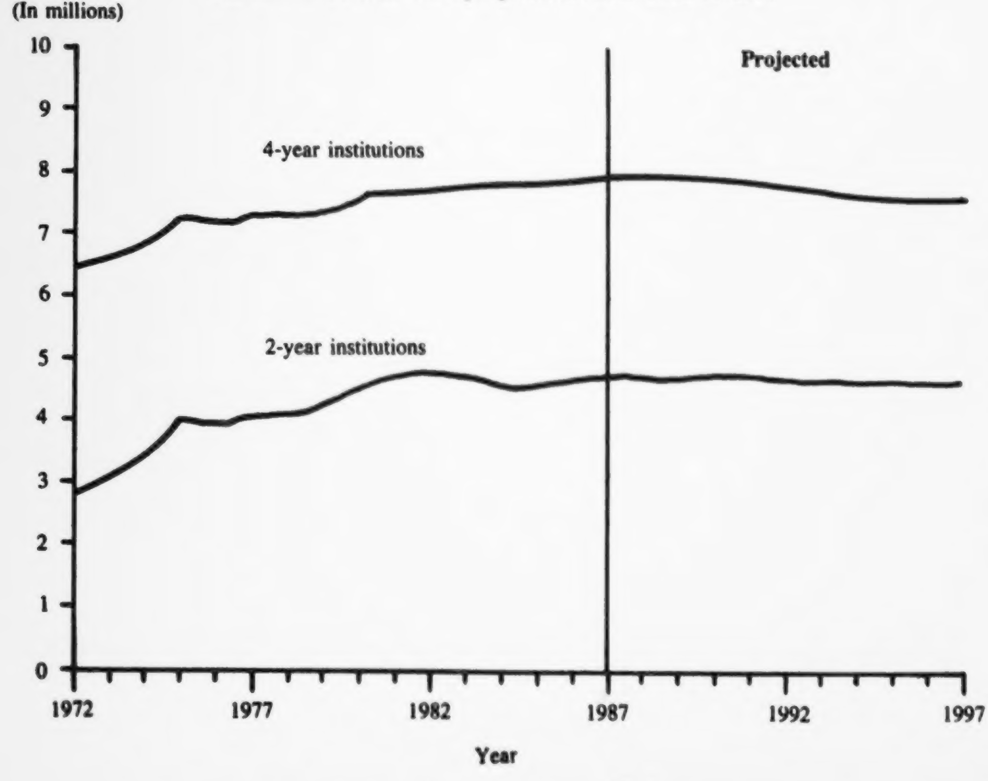
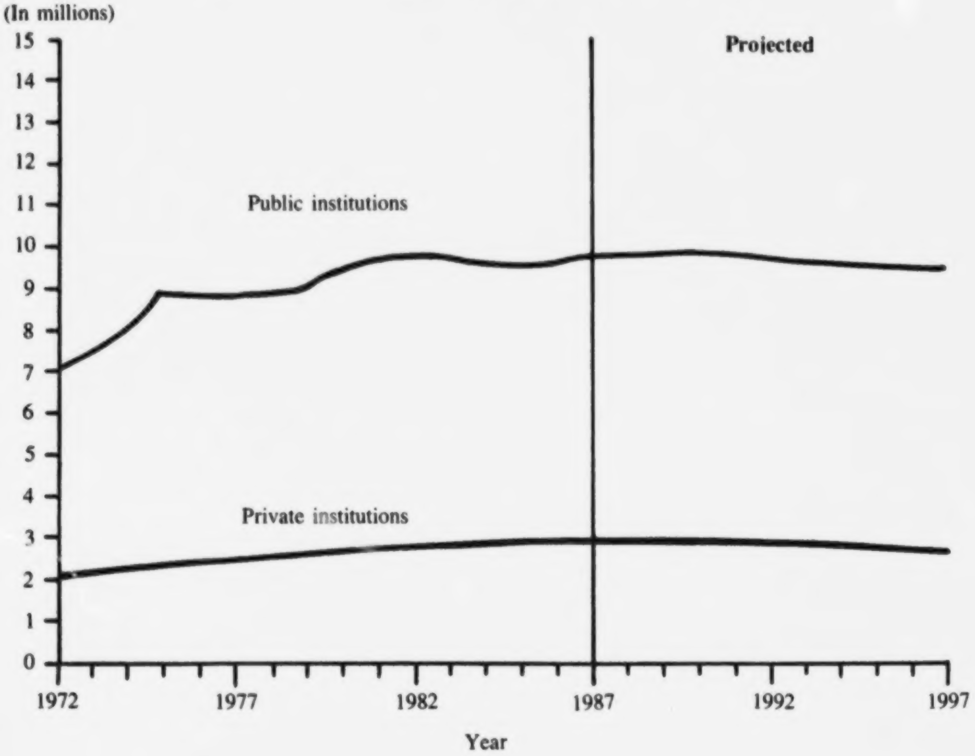


Figure 17.—Enrollment in institutions of higher education, by control of institution, with middle alternative projections: Fall 1972 to 1997



Enrollment by Control of Institution

Enrollment in public institutions grew from 7.1 million in 1972 to 9.7 million in 1987, an increase of 37 percent (table 3 and figure 17). By 1997, it is expected to decrease to 9.5 million. The increase primarily reflects the rapid rise of enrollment in public 2-year institutions. Private enrollment increased by 32 percent between 1972 and 1987. Enrollment in private institutions is expected to decrease from 2.8 million in 1987 to 2.7 million in 1997.

Enrollment in public 4-year institutions is expected to fall from 5.3 million in 1987 to 5.1 million in 1997, while enrollment in public 2-year institutions is expected to decrease slightly from 4.4 million in 1987 to 4.3 million in 1997. Enrollment in private 4-year institutions is expected to decrease from 2.5 million in 1987 to 2.4 million in 1997, while enrollment in private 2-year institutions is expected to fall in 10 years from 289,000 to 261,000.

Full-Time-Equivalent Enrollment

Full-time-equivalent enrollment increased from 7.3 million in 1972 to 9 million in 1987 and is expected to decrease to 8.7 million in 1997 (table 23 and figure 18). In the 1990s, the expected enrollment declines in the traditional college-age population are foreseen to be offset by increases in the number of older students. But these students will be primarily enrolled part-time. However, when part-time enrollments are converted to full-time equivalents, they will not be large enough to compensate completely for the declines in full-time enrollment.

Enrollment is expected to fall 3 percent from 1987 to 1997 (table 3). At the same time, full-time-equivalent enrollment is expected to fall 3 percent (table 23). Table 23 shows a decrease in full-time-equivalent of undergraduate enrollment in 4-year institutions, from 5.2 million in 1987 to 5 million in 1997. The full-time-equivalent of undergraduate enrollment in 2-year institutions is expected to decrease from 2.8 million to 2.7 million over the projection period. Also, the full-time-equivalent of postbaccalaureate enrollment in 4-year institutions is expected to decrease slightly.

Postbaccalaureate Enrollment

Graduate and first-professional enrollments are expected to decrease during the latter part of the projection period. Graduate enrollment rose from 1.07 million in 1972 to 1.38 million in 1987. This number is expected to fall to 1.34 million in 1997 (table 17 and figure 19). First-professional enrollment rose from 207,000 in 1972 to 273,000 in 1987 and is expected to fall to 260,000 in 1997 (table 20 and figure 19).

Figure 18.—Full-time-equivalent enrollment in institutions of higher education, with alternative projections: Fall 1972 to 1997

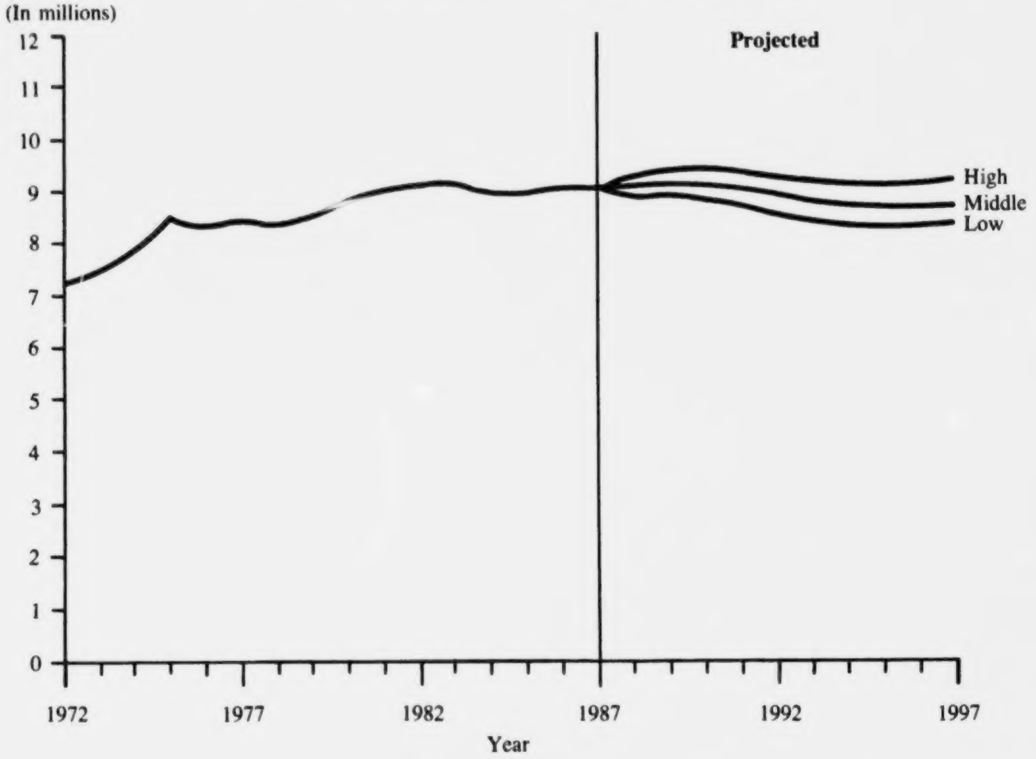


Figure 19.—Enrollment in institutions of higher education, by level enrolled, with middle alternative projections: Fall 1972 to 1997

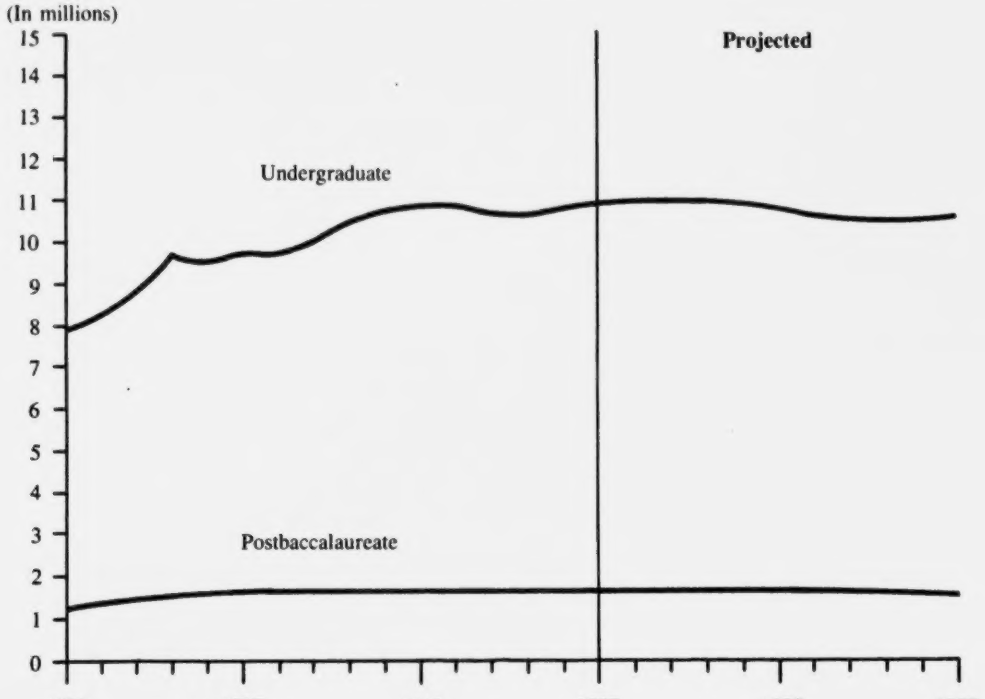


Table 1.—Enrollment in grades K–8[1] and 9–12 of public elementary and secondary schools, with projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	K–12[1]	K–8[1]	9–12
1972	45,744	31,831	13,913
1973	45,429	31,353	14,077
1974	45,053	30,921	14,132
1975	44,791	30,487	14,304
1976	44,317	30,006	14,311
1977	43,577	29,336	14,240
1978	42,550	28,328	14,223
1979	41,645	27,931	13,714
1980	40,987	27,674	13,313
1981	40,099	27,245	12,855
1982	39,652	27,156	12,496
1983	39,352	26,997	12,355
1984	39,295	26,918	12,377
1985	39,509	27,049	12,460
1986	39,837	27,404	12,434
1987[2]	40,200	27,983	12,217
		Projected	
1988	40,280	28,439	11,841
1989	40,337	28,807	11,530
1990	40,752	29,366	11,386
1991	41,306	29,794	11,512
1992	41,879	30,178	11,701
1993	42,444	30,460	11,984
1994	43,014	30,624	12,390
1995	43,442	30,738	12,704
1996	43,775	30,772	13,003
1997	43,960	30,754	13,206

[1] Includes most kindergarten and some nursery school enrollment.
[2] Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools;* Center for Education Statistics, Common Core of Data survey; and Early Estimate System survey, 1987. (This table was prepared October 1987.)

Table 2.—Enrollment in public elementary and secondary schools, by organizational level, with projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	K-12[1]	Elementary[1]	Secondary
1972	45,744	27,323	18,421
1973	45,429	26,435	18,995
1974	45,053	26,382	18,671
1975	44,791	25,640	19,151
1976	44,317	25,430	18,887
1977	43,577	24,954	18,623
1978	42,550	25,017	17,534
1979	41,645	24,543	17,102
1980	40,987	24,156	16,831
1981	40,099	23,819	16,280
1982	39,652	23,875	15,777
1983	39,352	24,010	15,342
1984	39,295	24,147	15,148
1985	39,509	24,290	15,219
1986	39,837	24,201	15,636
1987[2]	40,200	25,053	15,147
		Projected	
1988	40,280	25,510	14,770
1989	40,337	25,822	14,515
1990	40,752	26,295	14,457
1991	41,306	26,643	14,663
1992	41,879	26,906	14,973
1993	42,444	27,106	15,338
1994	43,014	27,231	15,783
1995	43,442	27,316	16,126
1996	43,775	27,373	16,402
1997	43,960	27,323	16,637

[1] Includes most kindergarten and some nursery school enrollment.

[2] Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools;* Center for Education Statistics, Common Core of Data survey; and Early Estimate System, 1987. (This table was prepared October 1987.)

Table 3.—Total enrollment in all institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1972	9,215	5,239	3,976	6,072	3,142	7,071	2,144
1973	9,602	5,371	4,231	6,189	3,413	7,420	2,183
1974	10,224	5,622	4,601	6,370	3,853	7,989	2,235
1975	11,185	6,149	5,036	6,841	4,344	8,835	2,350
1976	11,012	5,811	5,201	6,717	4,295	8,653	2,359
1977	11,286	5,789	5,497	6,793	4,493	8,847	2,439
1978	11,260	5,641	5,619	6,668	4,592	8,786	2,474
1979	11,570	5,683	5,887	6,794	4,776	9,037	2,533
1980	12,097	5,874	6,223	7,097	4,999	9,457	2,640
1981	12,372	5,975	6,397	7,181	5,190	9,647	2,725
1982	12,426	6,031	6,394	7,221	5,205	9,696	2,730
1983	12,465	6,024	6,441	7,261	5,204	9,683	2,782
1984	12,242	5,864	6,378	7,098	5,144	9,477	2,765
1985	12,247	5,818	6,429	7,075	5,172	9,479	2,768
1986*	12,398	5,840	6,557	7,148	5,249	9,600	2,797
1987*	12,544	5,881	6,663	7,219	5,325	9,706	2,838
				Middle alternative projections			
1988	12,560	5,880	6,680	7,157	5,403	9,760	2,800
1989	12,570	5,890	6,680	7,116	5,454	9,764	2,806
1990	12,585	5,905	6,680	7,095	5,490	9,777	2,808
1991	12,529	5,884	6,645	7,013	5,516	9,735	2,794
1992	12,408	5,845	6,563	6,916	5,492	9,639	2,769
1993	12,300	5,798	6,502	6,819	5,481	9,558	2,742
1994	12,201	5,744	6,457	6,743	5,458	9,486	2,715
1995	12,151	5,705	6,446	6,708	5,443	9,449	2,702
1996	12,142	5,688	6,454	6,711	5,431	9,446	2,696
1997	12,173	5,688	6,485	6,750	5,423	9,469	2,704
				Low alternative projections			
1988	12,273	5,779	6,494	6,933	5,340	9,530	2,743
1989	12,325	5,793	6,532	6,939	5,386	9,574	2,751
1990	12,284	5,762	6,522	6,863	5,421	9,545	2,739
1991	12,186	5,703	6,483	6,734	5,452	9,471	2,715
1992	12,017	5,617	6,400	6,589	5,428	9,342	2,675
1993	11,897	5,551	6,346	6,481	5,416	9,251	2,646
1994	11,790	5,489	6,301	6,398	5,392	9,171	2,619
1995	11,756	5,463	6,293	6,378	5,378	9,147	2,609
1996	11,754	5,454	6,300	6,391	5,363	9,148	2,606
1997	11,799	5,471	6,328	6,443	5,356	9,182	2,617
				High alternative projections			
1988	12,894	6,090	6,804	7,244	5,650	10,012	2,882
1989	13,038	6,123	6,915	7,297	5,741	10,130	2,908
1990	13,120	6,164	6,956	7,304	5,816	10,196	2,924
1991	13,121	6,181	6,940	7,237	5,884	10,197	2,924
1992	13,037	6,162	6,875	7,146	5,891	10,135	2,902
1993	12,950	6,132	6,818	7,061	5,889	10,066	2,884
1994	12,869	6,093	6,776	7,002	5,867	10,004	2,865
1995	12,822	6,061	6,761	6.973	5,849	9,971	2,851
1996	12,829	6,056	6,773	6,993	5,836	9,978	2,851
1997	12,874	6,067	6,807	7,044	5,830	10,010	2,864

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 4.—Total enrollment in 4-year institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1972	6,459	3,695	2,763	4,731	1,727	4,430	2,029
1973	6,592	3,718	2,873	4,758	1,833	4,530	2,062
1974	6,820	3,791	3,028	4,861	1,958	4,703	2,117
1975	7,215	3,986	3,230	5,079	2,137	4,998	2,217
1976	7,129	3,831	3,298	5,053	2,076	4,902	2,227
1977	7,243	3,823	3,419	5,138	2,104	4,945	2,298
1978	7,232	3,755	3,476	5,109	2,122	4,912	2,320
1979	7,353	3,762	3,591	5,202	2,151	4,980	2,373
1980	7,571	3,827	3,743	5,344	2,226	5,129	2,442
1981	7,655	3,852	3,805	5,387	2,270	5,166	2,489
1982	7,654	3,862	3,793	5,381	2,274	5,176	2,478
1983	7,741	3,892	3,848	5,434	2,306	5,223	2,518
1984	7,711	3,845	3,863	5,394	2,314	5,198	2,513
1985	7,716	3,814	3,898	5,384	2,328	5,210	2,506
1986*	7,754	3,805	3,949	5,419	2,335	5,254	2,499
1987*	7,816	3,802	4,013	5,461	2,355	5,268	2,548
Middle alternative projections							
1988	7,881	3,869	4,012	5,425	2,456	5,349	2,532
1989	7,857	3,867	3,990	5,377	2,480	5,320	2,537
1990	7,862	3,876	3,986	5,360	2,502	5,323	2,539
1991	7,831	3,871	3,960	5,307	2,524	5,303	2,528
1992	7,756	3,850	3,906	5,235	2,521	5,250	2,506
1993	7,679	3,817	3,862	5,157	2,522	5,197	2,482
1994	7,605	3,776	3,829	5,089	2,516	5,148	2,457
1995	7,563	3,745	3,818	5,055	2,508	5,120	2,443
1996	7,550	3,729	3,821	5,049	2,501	5,113	2,437
1997	7,570	3,728	3,842	5,075	2,495	5,127	2,443
Low alternative projections							
1988	7,679	3,805	3,874	5,241	2,438	5,198	2,481
1989	7,699	3,807	3,892	5,238	2,461	5,212	2,487
1990	7,669	3,790	3,879	5,186	2,483	5,191	2,478
1991	7,609	3,759	3,850	5,104	2,505	5,151	2,458
1992	7,499	3,704	3,795	4,997	2,502	5,075	2,424
1993	7,411	3,656	3,755	4,908	2,503	5,014	2,397
1994	7,333	3,611	3,722	4,837	2,496	4,961	2,372
1995	7,306	3,591	3,715	4,815	2,491	4,943	2,363
1996	7,296	3,579	3,717	4,814	2,482	4,938	2,358
1997	7,326	3,590	3,736	4,850	2,476	4,959	2,367
High alternative projections							
1988	8,064	3,989	4,075	5,484	2,580	5,457	2,607
1989	8,139	4,005	4,134	5,517	2,622	5,509	2,630
1990	8,183	4,035	4,148	5,522	2,661	5,538	2,645
1991	8,188	4,057	4,131	5,484	2,704	5,540	2,648
1992	8,131	4,049	4,082	5,417	2,714	5,502	2,629
1993	8,072	4,030	4,042	5,349	2,723	5,459	2,613
1994	8,012	4,002	4,010	5,294	2,718	5,418	2,594
1995	7,976	3,979	3,997	5,266	2,710	5,394	2,582
1996	7,975	3,974	4,001	5,273	2,702	5,394	2,581
1997	8,006	3,983	4,023	5,310	2,696	5,415	2,591

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 5.—Total enrollment in 2-year institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1972	2,756	1,543	1,212	1,340	1,415	2,641	114
1973	3,010	1,653	1,360	1,433	1,580	2,890	124
1974	3,404	1,831	1,573	1,509	1,895	3,285	119
1975	3,970	2,166	1,805	1,762	2,209	3,836	134
1976	3,883	1,980	1,904	1,665	2,219	3,752	132
1977	4,043	1,965	2,077	1,654	2,388	3,902	140
1978	4,028	1,885	2,143	1,558	2,470	3,874	155
1979	4,217	1,924	2,294	1,591	2,627	4,057	160
1980	4,526	2,047	2,479	1,754	2,772	4,329	197
1981	4,716	2,124	2,591	1,796	2,919	4,481	235
1982	4,772	2,170	2,602	1,839	2,933	4,520	252
1983	4,723	2,132	2,592	1,827	2,897	4,459	265
1984	4,531	2,018	2,514	1,703	2,829	4,279	252
1985	4,531	2,005	2,530	1,691	2,844	4,270	261
1986*	4,644	2,035	2,609	1,730	2,914	4,346	298
1987*	4,728	2,078	2,650	1,759	2,970	4,439	289
Middle alternative projections							
1988	4,679	2,011	2,668	1,732	2,947	4,411	268
1989	4,713	2,023	2,690	1,739	2,974	4,444	269
1990	4,723	2,029	2,694	1,735	2,988	4,454	269
1991	4,698	2,013	2,685	1,706	2,992	4,432	266
1992	4,652	1,995	2,657	1,681	2,971	4,389	263
1993	4,621	1,981	2,640	1,662	2,959	4,361	260
1994	4,596	1,968	2,628	1,654	2,942	4,338	258
1995	4,588	1,960	2,628	1,653	2,935	4,329	259
1996	4,592	1,959	2,633	1,662	2,930	4,333	259
1997	4,603	1,960	2,643	1,675	2,928	4,342	261
Low alternative projections							
1988	4,594	1,974	2,620	1,692	2,902	4,332	262
1989	4,626	1,986	2,640	1,701	2,925	4,362	264
1990	4,615	1,972	2,643	1,677	2,938	4,354	261
1991	4,577	1,944	2,633	1,630	2,947	4,320	257
1992	4,518	1,913	2,605	1,592	2,926	4,267	251
1993	4,486	1,895	2,591	1,573	2,913	4,237	249
1994	4,457	1,878	2,579	1,561	2,896	4,210	247
1995	4,450	1,872	2,578	1,563	2,887	4,204	246
1996	4,458	1,875	2,583	1,577	2,881	4,210	248
1997	4,473	1,881	2,592	1,593	2,880	4,223	250
High alternative projections							
1988	4,830	2,101	2,729	1,760	3,070	4,555	275
1989	4,899	2,118	2,781	1,780	3,119	4,621	278
1990	4,937	2,129	2,808	1,782	3,155	4,658	279
1991	4,933	2,124	2,809	1,753	3,180	4,657	276
1992	4,906	2,113	2,793	1,729	3,177	4,633	273
1993	4,878	2,102	2,776	1,712	3,166	4,607	271
1994	4,857	2,091	2,766	1,708	3,149	4,586	271
1995	4,846	2,082	2,764	1,707	3,139	4,577	269
1996	4,854	2,082	2,772	1,720	3,134	4,584	270
1997	4,868	2,084	2,784	1,734	3,134	4,595	273

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 6.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with middle alternative projections: 50 States and D.C., fall 1977, 1982, 1987, 1992, and 1997

(In thousands)

Age	Total	1977 (Estimated)		Total	1982 (Estimated)		Total	1987 (Estimated)		Total	1992 (Projected)		Total	1997 (Projected)	
		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time
Total	**11,286**	**6,793**	**4,493**	**12,426**	**7,221**	**5,205**	**12,544**	**7,219**	**5,325**	**12,408**	**6,916**	**5,492**	**12,173**	**6,750**	**5,423**
14 to 17 years	254	221	33	234	210	24	210	188	22	185	165	20	205	183	22
18 to 19 years	2,703	2,386	317	2,725	2,382	343	2,764	2,450	314	2,608	2,309	299	2,746	2,425	321
20 to 21 years	2,271	1,930	341	2,539	2,084	455	2,224	1,847	377	2,224	1,847	377	2,051	1,705	346
22 to 24 years	1,764	1,057	707	2,081	1,228	853	2,048	1,308	740	1,841	1,168	673	1,652	1,049	603
25 to 29 years	1,844	711	1,133	1,995	768	1,227	1,947	724	1,223	1,789	658	1,132	1,660	610	1,050
30 to 34 years	1,039	254	784	1,263	300	963	1,329	344	985	1,408	360	1,048	1,292	330	962
35 years and over	1,411	234	1,177	1,589	248	1,341	2,023	359	1,664	2,354	410	1,944	2,564	447	2,117
Men	5,789	3,650	2,138	6,031	3,753	2,279	5,881	3,611	2,270	5,845	3,532	2,313	5,688	3,423	2,265
14 to 17 years	106	90	17	108	91	17	91	82	9	81	73	8	90	81	9
18 to 19 years	1,313	1,176	138	1,294	1,160	134	1,309	1,174	135	1,309	1,177	132	1,367	1,223	144
20 to 21 years	1,211	1,037	174	1,286	1,080	206	1,089	927	162	1,088	927	161	1,008	860	148
22 to 24 years	1,015	661	354	1,137	716	422	1,080	728	352	977	657	320	878	591	287
25 to 29 years	1,052	456	596	1,055	446	609	1,016	417	599	935	383	552	867	355	512
30 to 34 years	535	146	389	559	174	385	613	169	444	653	180	473	599	165	434
35 years and over	557	84	473	591	85	506	684	115	569	801	135	667	878	148	730
Women	5,497	3,142	2,354	6,394	3,467	2,928	6,663	3,608	3,055	6,563	3,384	3,179	6,485	3,327	3,158
14 to 17 years	148	131	16	126	119	7	119	106	13	104	92	11	115	103	13
18 to 19 years	1,389	1,210	179	1,431	1,222	209	1,455	1,276	179	1,299	1,132	167	1,379	1,202	177
20 to 21 years	1,060	893	167	1,253	1,004	248	1,135	920	215	1,136	920	216	1,043	845	198
22 to 24 years	749	395	354	943	512	431	968	580	388	864	511	353	774	458	316
25 to 29 years	792	255	537	940	322	618	931	307	624	854	275	580	793	255	538
30 to 34 years	504	108	396	704	125	578	716	175	541	755	180	575	693	165	528
35 years and over	855	150	704	998	164	835	1,339	244	1,095	1,553	275	1,278	1,686	299	1,387

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987 and U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25, No. 985 and unpublished tabulations. (This table was prepared November 1987.)

Table 7.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with low alternative projections: 50 States and D.C., fall 1977, 1982, 1987, 1992, and 1997

(In thousands)

Age	Total	1977 (Estimated)		Total	1982 (Estimated)		Total	1987 (Estimated)		Total	1992 (Projected)		Total	1997 (Projected)	
		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time
Total	**11,286**	**6,793**	**4,493**	**12,426**	**7,221**	**5,205**	**12,544**	**7,219**	**5,325**	**12,017**	**6,589**	**5,428**	**11,799**	**6,443**	**5,356**
14 to 17 years	254	221	33	234	210	24	210	188	22	185	165	20	205	183	22
18 to 19 years	2,703	2,386	317	2,725	2,382	343	2,764	2,450	314	2,396	2,128	268	2,548	2,263	285
20 to 21 years	2,271	1,930	341	2,539	2,084	455	2,224	1,847	377	2,102	1,738	364	1,930	1,595	335
22 to 24 years	1,764	1,057	707	2,081	1,228	853	2,048	1,308	740	1,784	1,131	653	1,602	1,016	586
25 to 29 years	1,844	711	1,133	1,995	768	1,227	1,947	724	1,223	1,789	657	1,132	1,660	610	1,050
30 to 34 years	1,039	254	784	1,263	300	963	1,329	344	985	1,407	360	1,048	1,292	330	962
35 years and over	1,411	234	1,177	1,589	248	1,341	2,023	359	1,664	2,354	410	1,944	2,564	447	2,117
Men	5,789	3,650	2,138	6,031	3,753	2,279	5,881	3,611	2,270	5,617	3,334	2,283	5,471	3,240	2,231
14 to 17 years	106	90	17	108	91	17	91	82	9	81	73	8	90	81	9
18 to 19 years	1,313	1,176	138	1,294	1,160	134	1,309	1,174	135	1,148	1,032	116	1,220	1,097	123
20 to 21 years	1,211	1,037	174	1,286	1,080	206	1,089	927	162	1,055	894	161	969	821	148
22 to 24 years	1,015	661	354	1,137	716	422	1,080	728	352	945	639	305	849	575	274
25 to 29 years	1,052	456	596	1,055	446	609	1,016	417	599	934	383	552	867	355	512
30 to 34 years	535	146	389	559	174	385	613	169	444	652	180	473	599	165	434
35 years and over	557	84	473	591	85	506	684	115	569	801	135	667	878	148	730
Women	5,497	3,142	2,354	6,394	3,467	2,928	6,663	3,608	3,055	6,400	3,255	3,145	6,328	3,203	3,125
14 to 17 years	148	131	16	126	119	7	119	106	13	104	92	11	115	103	13
18 to 19 years	1,389	1,210	179	1,431	1,222	209	1,455	1,276	179	1,249	1,097	152	1,328	1,166	161
20 to 21 years	1,060	893	167	1,253	1,004	248	1,135	920	215	1,047	844	203	961	774	186
22 to 24 years	749	395	354	943	512	431	968	580	388	839	492	347	753	441	311
25 to 29 years	792	255	537	940	322	618	931	307	624	854	275	580	793	255	538
30 to 34 years	504	108	396	704	125	578	716	175	541	755	180	575	694	165	528
35 years and over	855	150	704	998	164	835	1,339	244	1,095	1,553	275	1,278	1,686	299	1,387

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987 and U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25, No. 985 and unpublished tabulations. (This table was prepared November 1987.)

Table 8.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with high alternative projections: 50 States and D.C., fall 1977, 1982, 1987, 1992, and 1997

(In thousands)

Age	Total	1977 (Estimated)		Total	1982 (Estimated)		Total	1987 (Estimated)		Total	1992 (Projected)		Total	1997 (Projected)	
		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time
Total	**11,286**	**6,793**	**4,493**	**12,426**	**7,221**	**5,205**	**12,544**	**7,219**	**5,325**	**13,037**	**7,146**	**5,891**	**12,874**	**7,044**	**5,830**
14 to 17 years	254	221	33	234	210	24	210	188	22	186	165	21	207	183	23
18 to 19 years	2,703	2,386	317	2,725	2,382	343	2,764	2,450	314	2,722	2,397	325	2,865	2,520	345
20 to 21 years	2,271	1,930	341	2,539	2,084	455	2,224	1,847	377	2,246	1,847	399	2,073	1,705	368
22 to 24 years	1,764	1,057	707	2,081	1,228	853	2,048	1,308	740	1,935	1,237	698	1,738	1,110	627
25 to 29 years	1,844	711	1,133	1,995	768	1,227	1,947	724	1,223	1,819	657	1,162	1,673	610	1,063
30 to 34 years	1,039	254	784	1,263	300	963	1,329	344	985	1,459	362	1,098	1,346	333	1,013
35 years and over	1,411	234	1,177	1,589	248	1,341	2,023	359	1,664	2,671	482	2,190	2,973	584	2,390
Men	5,789	3,650	2,138	6,031	3,753	2,279	5,881	3,611	2,270	6,162	3,625	2,537	6,067	3,580	2,487
14 to 17 years	106	90	17	108	91	17	91	82	9	82	73	9	91	81	11
18 to 19 years	1,313	1,176	138	1,294	1,160	134	1,309	1,174	135	1,317	1,177	140	1,371	1,223	148
20 to 21 years	1,211	1,037	174	1,286	1,080	206	1,089	927	162	1,094	927	167	1,015	860	155
22 to 24 years	1,015	661	354	1,137	716	422	1,080	728	352	1,008	681	327	905	612	293
25 to 29 years	1,052	456	596	1,055	446	609	1,016	417	599	965	383	582	880	355	525
30 to 34 years	535	146	389	559	174	385	613	169	444	702	180	523	650	165	485
35 years and over	557	84	473	591	85	506	684	115	569	996	206	790	1,154	285	870
Women	5,497	3,142	2,354	6,394	3,467	2,928	6,663	3,608	3,055	6,875	3,521	3,354	6,807	3,464	3,343
14 to 17 years	148	131	16	126	119	7	119	106	13	104	92	11	115	103	13
18 to 19 years	1,389	1,210	179	1,431	1,222	209	1,455	1,276	179	1,406	1,220	185	1,493	1,297	197
20 to 21 years	1,060	893	167	1,253	1,004	248	1,135	920	215	1,152	920	232	1,058	845	213
22 to 24 years	749	395	354	943	512	431	968	580	388	928	556	372	832	498	334
25 to 29 years	792	255	537	940	322	618	931	307	624	854	275	580	793	255	538
30 to 34 years	504	108	396	704	125	578	716	175	541	757	182	575	697	169	528
35 years and over	855	150	704	998	164	835	1,339	244	1,095	1,675	275	1,400	1,819	299	1,520

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987 and U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25, No. 985 and unpublished tabulations. (This table was prepared November 1987.)

Table 9.—Total enrollment in all institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	9,215	3,557	1,681	2,514	1,461
1973	9,602	3,579	1,792	2,612	1,621
1974	10,224	3,646	1,976	2,724	1,877
1975	11,185	3,926	2,226	2,915	2,120
1976	11,012	3,704	2,107	3,014	2,188
1977	11,286	3,650	2,138	3,142	2,354
1978	11,260	3,527	2,113	3,140	2,479
1979	11,570	3,544	2,142	3,249	2,636
1980	12,097	3,689	2,185	3,409	2,813
1981	12,372	3,714	2,262	3,469	2,927
1982	12,426	3,753	2,279	3,467	2,928
1983	12,465	3,760	2,264	3,501	2,939
1984	12,242	3,647	2,216	3,450	2,927
1985	12,247	3,608	2,211	3,468	2,961
1986*	12,398	3,619	2,220	3,537	3,021
1987*	12,544	3,611	2,270	3,608	3,055
			Middle alternative projections		
1988	12,560	3,586	2,294	3,571	3,109
1989	12,570	3,576	2,314	3,540	3,140
1990	12,585	3,581	2,324	3,514	3,166
1991	12,529	3,559	2,325	3,454	3,191
1992	12,408	3,532	2,313	3,384	3,179
1993	12,300	3,492	2,306	3,327	3,175
1994	12,201	3,454	2,290	3,289	3,168
1995	12,151	3,425	2,280	3,283	3,163
1996	12,142	3,417	2,271	3,294	3,160
1997	12,173	3,423	2,265	3,327	3,158
			Low alternative projections		
1988	12,273	3,514	2,265	3,419	3,075
1989	12,325	3,513	2,280	3,426	3,106
1990	12,284	3,472	2,290	3,391	3,131
1991	12,186	3,407	2,296	3,327	3,156
1992	12,017	3,334	2,283	3,255	3,145
1993	11,897	3,278	2,273	3,203	3,143
1994	11,790	3,231	2,258	3,167	3,134
1995	11,756	3,216	2,247	3,162	3,131
1996	11,754	3,217	2,237	3,174	3,126
1997	11,799	3,240	2,231	3,203	3,125
			High alternative projections		
1988	12,894	3,615	2,475	3,629	3,175
1989	13,038	3,620	2,503	3,677	3,238
1990	13,120	3,644	2,520	3,660	3,296
1991	13,121	3,643	2,538	3,594	3,346
1992	13,037	3,625	2,537	3,521	3,354
1993	12,950	3,598	2,534	3,463	3,355
1994	12,869	3,575	2,518	3,427	3,349
1995	12,822	3,555	2,506	3,418	3,343
1996	12,829	3,561	2,495	3,432	3,341
1997	12,874	3,580	2,487	3,464	3,343

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 10.—Total enrollment in public 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	4,430	1,860	626	1,358	586
1973	4,530	1,851	658	1,394	627
1974	4,703	1,870	694	1,448	691
1975	4,998	1,947	764	1,522	767
1976	4,902	1,879	709	1,554	759
1977	4,945	1,873	696	1,606	770
1978	4,912	1,822	687	1,613	789
1979	4,980	1,833	676	1,661	810
1980	5,129	1,873	685	1,719	851
1981	5,166	1,877	692	1,741	858
1982	5,176	1,890	698	1,734	855
1983	5,223	1,910	698	1,755	860
1984	5,198	1,880	694	1,749	874
1985	5,210	1,864	693	1,759	892
1986*	5,254	1,870	698	1,789	897
1987*	5,268	1,847	699	1,825	897
Middle alternative projections					
1988	5,346	1,852	753	1,819	925
1989	5,320	1,844	760	1,781	935
1990	5,323	1,845	765	1,769	944
1991	5,303	1,837	770	1,741	955
1992	5,250	1,823	769	1,705	953
1993	5,197	1,800	769	1,674	954
1994	5,148	1,777	765	1,652	954
1995	5,120	1,760	761	1,647	952
1996	5,113	1,753	758	1,651	951
1997	5,127	1,756	755	1,667	949
Low alternative projections					
1988	5,198	1,814	747	1,718	919
1989	5,212	1,811	752	1,720	929
1990	5,191	1,793	758	1,702	938
1991	5,151	1,766	764	1,673	948
1992	5,075	1,730	762	1,636	947
1993	5,014	1,697	761	1,607	949
1994	4,961	1,670	758	1,586	947
1995	4,943	1,660	755	1,582	946
1996	4,938	1,657	751	1,586	944
1997	4,959	1,668	748	1,600	943
High alternative projections					
1988	5,457	1,866	818	1,829	944
1989	5,509	1,867	828	1,851	963
1990	5,538	1,878	836	1,843	981
1991	5,540	1,881	847	1,813	999
1992	5,502	1,873	850	1,775	1,004
1993	5,459	1,856	852	1,744	1,007
1994	5,418	1,840	849	1,722	1,007
1995	5,394	1,828	845	1,716	1,005
1996	5,394	1,828	841	1,721	1,004
1997	5,415	1,837	838	1,737	1,003

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 11.—Total enrollment in public 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	2,641	750	737	500	654
1973	2,890	793	800	545	751
1974	3,285	833	941	586	925
1975	3,836	989	1,108	674	1,066
1976	3,752	858	1,061	704	1,129
1977	3,902	805	1,099	739	1,259
1978	3,874	738	1,084	700	1,351
1979	4,057	739	1,123	728	1,468
1980	4,329	812	1,152	784	1,581
1981	4,481	827	1,192	803	1,658
1982	4,520	850	1,195	810	1,665
1983	4,459	827	1,175	807	1,650
1984	4,279	762	1,138	756	1,623
1985	4,270	743	1,138	754	1,636
1986*	4,346	737	1,152	763	1,694
1987*	4,439	734	1,188	801	1,715
			Middle alternative projections		
1988	4,411	747	1,142	788	1,734
1989	4,444	749	1,152	793	1,750
1990	4,454	752	1,154	786	1,762
1991	4,432	743	1,148	769	1,772
1992	4,389	737	1,137	753	1,762
1993	4,361	731	1,130	743	1,757
1994	4,338	728	1,121	739	1,750
1995	4,329	725	1,116	740	1,748
1996	4,333	728	1,112	746	1,747
1997	4,342	731	1,110	754	1,747
			Low alternative projections		
1988	4,332	732	1,123	768	1,709
1989	4,362	736	1,129	772	1,725
1990	4,354	723	1,130	764	1,737
1991	4,320	699	1,128	746	1,747
1992	4,267	681	1,118	730	1,738
1993	4,237	673	1,109	721	1,734
1994	4,210	667	1,099	717	1,727
1995	4,204	668	1,093	718	1,725
1996	4,210	674	1,089	724	1,723
1997	4,223	681	1,087	731	1,724
			High alternative projections		
1988	4,555	751	1,224	809	1,771
1989	4,621	755	1,237	823	1,806
1990	4,658	761	1,241	818	1,838
1991	4,657	755	1,243	799	1,860
1992	4,633	750	1,238	783	1,862
1993	4,607	746	1,231	772	1,858
1994	4,586	746	1,220	768	1,852
1995	4,577	744	1,214	769	1,850
1996	4,584	749	1,209	776	1,850
1997	4,595	753	1,206	784	1,852

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 12.—Total enrollment in private 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	2,029	904	305	609	210
1973	2,062	890	319	623	229
1974	2,117	902	325	641	248
1975	2,217	943	332	667	274
1976	2,227	921	322	699	286
1977	2,298	925	329	734	309
1978	2,320	919	327	755	319
1979	2,373	924	329	784	336
1980	2,442	936	333	816	357
1981	2,489	939	344	830	376
1982	2,478	933	341	824	380
1983	2,518	935	349	834	399
1984	2,513	926	345	839	401
1985	2,506	917	340	844	403
1986*	2,499	905	332	857	405
1987*	2,548	915	342	875	417
Middle alternative projections					
1988	2,532	904	360	850	418
1989	2,537	900	363	852	422
1990	2,539	900	366	846	427
1991	2,528	896	368	833	431
1992	2,506	890	368	817	431
1993	2,482	880	368	803	431
1994	2,457	868	366	792	431
1995	2,443	859	365	789	430
1996	2,437	855	363	790	429
1997	2,443	855	362	797	429
Low alternative projections					
1988	2,481	887	357	822	415
1989	2,487	884	360	823	420
1990	2,478	876	363	815	424
1991	2,458	864	365	801	428
1992	2,424	847	365	784	428
1993	2,397	833	365	771	428
1994	2,372	820	363	761	428
1995	2,363	814	362	759	428
1996	2,358	811	360	760	427
1997	2,367	815	359	767	426
High alternative projections					
1988	2,607	914	391	875	427
1989	2,630	914	396	885	435
1990	2,645	920	401	881	443
1991	2,648	923	406	867	452
1992	2,629	919	407	850	453
1993	2,613	913	409	836	455
1994	2,594	906	407	826	455
1995	2,582	900	406	822	454
1996	2,581	901	404	823	453
1997	2,591	906	402	830	453

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 13.—Total enrollment in private 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	115	43	13	47	11
1973	120	45	15	50	14
1974	119	41	16	49	13
1975	134	47	22	52	13
1976	132	46	15	57	14
1977	141	47	14	63	16
1978	154	48	15	72	20
1979	160	48	14	76	22
1980	198	68	15	90	24
1981	236	71	34	95	35
1982	252	80	45	99	28
1983	264	88	42	105	30
1984	252	79	37	106	29
1985	261	84	40	110	30
1986*	298	106	39	127	25
1987*	289	116	40	108	26
		Middle alternative projections			
1988	268	83	39	114	32
1989	269	83	39	114	33
1990	269	84	39	113	33
1991	266	83	39	111	33
1992	263	82	39	109	33
1993	260	81	39	107	33
1994	258	81	38	106	33
1995	259	81	38	107	33
1996	259	81	38	107	33
1997	261	81	38	109	33
		Low alternative projections			
1988	262	81	38	111	32
1989	264	82	39	111	32
1990	261	80	39	110	32
1991	257	78	39	107	33
1992	251	76	38	105	32
1993	249	75	38	104	32
1994	247	74	38	103	32
1995	246	74	37	103	32
1996	248	75	37	104	32
1997	250	76	37	105	32
		High alternative projections			
1988	275	84	42	116	33
1989	278	84	42	118	34
1990	279	85	42	118	34
1991	276	84	42	115	35
1992	273	83	42	113	35
1993	271	83	42	111	35
1994	271	83	42	111	35
1995	269	83	41	111	34
1996	270	83	41	112	34
1997	273	84	41	113	35

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 14.—Undergraduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	7,941	3,121	1,308	2,367	1,145
1973	8,261	3,135	1,403	2,445	1,278
1974	8,798	3,191	1,574	2,535	1,498
1975	9,679	3,459	1,798	2,710	1,712
1976	9,429	3,242	1,660	2,788	1,739
1977	9,714	3,188	1,708	2,905	1,913
1978	9,691	3,072	1,694	2,895	2,030
1979	9,998	3,087	1,734	2,993	2,185
1980	10,475	3,227	1,773	3,135	2,340
1981	10,755	3,261	1,848	3,188	2,458
1982	10,825	3,299	1,871	3,184	2,470
1983	10,846	3,304	1,854	3,210	2,478
1984	10,618	3,195	1,812	3,153	2,459
1985	10,597	3,156	1,806	3,163	2,471
1986*	10,724	3,166	1,820	3,217	2,522
1987*	10,895	3,170	1,874	3,296	2,554
			Middle alternative projections		
1988	10,919	3,128	1,878	3,264	2,649
1989	10,926	3,121	1,893	3,236	2,676
1990	10,937	3,129	1,899	3,212	2,697
1991	10,875	3,109	1,897	3,152	2,717
1992	10,757	3,084	1,885	3,082	2,706
1993	10,647	3,044	1,878	3,023	2,702
1994	10,561	3,013	1,864	2,989	2,695
1995	10,526	2,991	1,855	2,988	2,692
1996	10,530	2,990	1,847	3,004	2,689
1997	10,570	3,000	1,843	3,039	2,688
			Low alternative projections		
1988	10,645	3,060	1,851	3,117	2,617
1989	10,693	3,062	1,862	3,126	2,643
1990	10,649	3,024	1,867	3,094	2,664
1991	10,545	2,961	1,870	3,029	2,685
1992	10,380	2,890	1,858	2,957	2,675
1993	10,258	2,835	1,848	2,903	2,672
1994	10,162	2,794	1,834	2,870	2,664
1995	10,141	2,786	1,824	2,870	2,661
1996	10,154	2,794	1,816	2,887	2,657
1997	10,209	2,821	1,811	2,919	2,658
			High alternative projections		
1988	11,181	3,143	2,020	3,312	2,706
1989	11,309	3,145	2,041	3,362	2,761
1990	11,375	3,165	2,052	3,348	2,810
1991	11,353	3,157	2,064	3,281	2,851
1992	11,263	3,136	2,061	3,208	2,858
1993	11,164	3,103	2,056	3,148	2,857
1994	11,087	3,079	2,042	3,115	2,851
1995	11,050	3,061	2,031	3,111	2,847
1996	11,065	3,066	2,022	3,132	2,845
1997	11,112	3,082	2,016	3,166	2,848

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 15.—Undergraduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	6,223	2,352	1,115	1,761	995
1973	6,522	2,380	1,199	1,829	1,114
1974	7,031	2,433	1,366	1,909	1,323
1975	7,826	2,662	1,583	2,063	1,518
1976	7,617	2,471	1,478	2,115	1,553
1977	7,842	2,413	1,524	2,197	1,708
1978	7,786	2,302	1,510	2,161	1,813
1979	8,046	2,316	1,551	2,229	1,952
1980	8,441	2,426	1,588	2,334	2,093
1981	8,648	2,452	1,639	2,373	2,185
1982	8,713	2,487	1,653	2,373	2,201
1983	8,697	2,482	1,635	2,385	2,195
1984	8,494	2,390	1,600	2,325	2,179
1985	8,478	2,357	1,596	2,331	2,193
1986*	8,577	2,358	1,611	2,366	2,243
1987*	8,706	2,336	1,655	2,445	2,269
			Middle alternative projections		
1988	8,761	2,342	1,652	2,421	2,346
1989	8,763	2,338	1,666	2,390	2,369
1990	8,774	2,344	1,671	2,372	2,387
1991	8,727	2,328	1,668	2,327	2,404
1992	8,633	2,309	1,656	2,275	2,393
1993	8,551	2,280	1,649	2,233	2,389
1994	8,486	2,258	1,637	2,209	2,382
1995	8,458	2,242	1,629	2,208	2,379
1996	8,462	2,242	1,622	2,221	2,377
1997	8,491	2,250	1,619	2,246	2,376
			Low alternative projections		
1988	8,539	2,292	1,628	2,303	2,316
1989	8,580	2,294	1,637	2,310	2,339
1990	8,549	2,265	1,641	2,286	2,357
1991	8,470	2,215	1,643	2,238	2,374
1992	8,344	2,162	1,632	2,185	2,365
1993	8,252	2,122	1,622	2,146	2,362
1994	8,178	2,092	1,609	2,123	2,354
1995	8,162	2,087	1,601	2,123	2,351
1996	8,172	2,094	1,594	2,136	2,348
1997	8,212	2,114	1,590	2,159	2,349
			High alternative projections		
1988	8,971	2,353	1,776	2,446	2,396
1989	9,078	2,356	1,795	2,483	2,444
1990	9,135	2,371	1,804	2,472	2,488
1991	9,121	2,364	1,813	2,422	2,522
1992	9,055	2,349	1,810	2,368	2,528
1993	8,980	2,325	1,804	2,325	2,526
1994	8,920	2,308	1,791	2,301	2,520
1995	8,893	2,295	1,782	2,299	2,517
1996	8,905	2,300	1,774	2,315	2,516
1997	8,938	2,311	1,769	2,340	2,518

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 16.—Undergraduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	1,718	769	193	606	150
1973	1,739	755	204	616	164
1974	1,767	758	208	626	175
1975	1,853	797	215	647	194
1976	1,812	771	182	673	186
1977	1,872	775	184	708	205
1978	1,905	770	184	734	217
1979	1,951	772	184	762	233
1980	2,033	800	185	801	246
1981	2,106	809	209	816	272
1982	2,112	812	219	811	270
1983	2,149	823	219	824	283
1984	2,124	805	212	827	280
1985	2,120	800	210	832	278
1986*	2,147	808	209	851	279
1987*	2,190	834	219	851	285
			Middle alternative projections		
1988	2,158	786	226	843	303
1989	2,163	783	227	846	307
1990	2,163	785	228	840	310
1991	2,148	781	229	825	313
1992	2,124	775	229	807	313
1993	2,096	764	229	790	313
1994	2,075	755	227	780	313
1995	2,068	749	226	780	313
1996	2,068	748	225	783	312
1997	2,079	750	224	793	312
			Low alternative projections		
1988	2,106	768	223	814	301
1989	2,113	768	225	816	304
1990	2,100	759	226	808	307
1991	2,075	746	227	791	311
1992	2,036	728	226	772	310
1993	2,006	713	226	757	310
1994	1,984	702	225	747	310
1995	1,979	699	223	747	310
1996	1,982	700	222	751	309
1997	1,997	707	221	760	309
			High alternative projections		
1988	2,210	790	244	866	310
1989	2,231	789	246	879	317
1990	2,240	794	248	876	322
1991	2,232	793	251	859	329
1992	2,208	787	251	840	330
1993	2,184	778	252	823	331
1994	2,167	771	251	814	331
1995	2,157	766	249	812	330
1996	2,160	766	248	817	329
1997	2,174	771	247	826	330

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 17.—Graduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	1,066	268	358	126	313
1973	1,123	273	375	137	340
1974	1,190	276	387	151	375
1975	1,263	290	410	163	400
1976	1,333	287	427	176	443
1977	1,318	289	411	183	434
1978	1,312	280	402	188	442
1979	1,309	280	389	196	444
1980	1,343	281	394	204	466
1981	1,343	277	397	207	462
1982	1,322	280	390	205	447
1983	1,340	286	391	211	452
1984	1,345	286	386	215	459
1985	1,376	289	388	220	479
1986*	1,392	291	381	231	488
1987*	1,377	283	379	225	490
		Middle alternative projections			
1988	1,363	293	397	222	451
1989	1,368	292	402	220	454
1990	1,372	289	406	218	459
1991	1,378	287	409	218	464
1992	1,377	287	409	218	463
1993	1,379	287	409	220	463
1994	1,369	282	407	217	463
1995	1,358	278	406	213	461
1996	1,349	273	405	210	461
1997	1,343	271	403	209	460
		Low alternative projections			
1988	1,353	291	395	218	449
1989	1,357	288	399	217	453
1990	1,363	287	404	215	457
1991	1,369	285	407	216	461
1992	1,366	284	406	216	460
1993	1,368	284	406	217	461
1994	1,359	279	405	215	460
1995	1,351	276	404	211	460
1996	1,340	271	402	208	459
1997	1,331	268	401	205	457
		High alternative projections			
1988	1,424	302	434	229	459
1989	1,438	304	441	227	466
1990	1,454	306	447	226	475
1991	1,474	311	452	227	484
1992	1,479	313	454	227	485
1993	1,487	317	456	227	487
1994	1,484	317	454	226	487
1995	1,477	317	453	222	485
1996	1,470	317	451	217	485
1997	1,468	319	449	216	484

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 18.—Graduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	757	182	245	87	243
1973	800	185	257	95	263
1974	852	189	265	106	292
1975	906	198	283	114	311
1976	931	190	287	120	334
1977	900	190	267	124	319
1978	894	183	258	127	326
1979	884	182	246	133	325
1980	900	180	245	137	337
1981	887	177	242	138	329
1982	870	180	237	136	317
1983	872	184	235	140	313
1984	870	182	229	142	317
1985	891	181	232	144	333
1986*	905	185	231	153	336
1987*	890	178	228	146	338
		Middle alternative projections			
1988	883	186	240	146	311
1989	887	185	243	145	314
1990	889	183	245	144	317
1991	894	182	247	144	321
1992	893	182	247	144	320
1993	894	182	247	145	320
1994	888	179	246	143	320
1995	881	176	245	141	319
1996	876	173	245	139	319
1997	871	172	243	138	318
		Low alternative projections			
1988	877	184	239	144	310
1989	880	183	241	143	313
1990	884	182	244	142	316
1991	889	181	246	143	319
1992	886	180	245	143	318
1993	887	180	245	143	319
1994	882	177	245	142	318
1995	876	175	244	139	318
1996	869	172	243	137	317
1997	863	170	242	135	316
		High alternative projections			
1988	922	191	263	151	317
1989	932	193	267	150	322
1990	941	194	270	149	328
1991	954	197	273	150	334
1992	957	198	274	150	335
1993	962	201	275	150	336
1994	960	201	274	149	336
1995	955	201	273	146	335
1996	951	201	272	143	335
1997	950	202	271	143	334

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 19.—Graduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	308	86	113	39	70
1973	325	88	118	42	77
1974	337	87	122	45	83
1975	357	92	127	49	89
1976	402	97	140	56	109
1977	416	98	144	59	115
1978	418	97	144	61	116
1979	424	98	144	63	119
1980	442	100	147	67	128
1981	456	100	155	69	132
1982	453	100	153	69	131
1983	468	103	156	71	138
1984	476	104	156	75	142
1985	486	108	156	76	147
1986*	486	106	150	78	152
1987*	487	105	151	79	152
			Middle alternative projections		
1988	480	107	157	76	140
1989	481	107	159	75	140
1990	483	106	161	74	142
1991	484	105	162	74	143
1992	484	105	162	74	143
1993	485	105	162	75	143
1994	481	103	161	74	143
1995	477	102	161	72	142
1996	473	100	160	71	142
1997	472	99	160	71	142
			Low alternative projections		
1988	476	107	156	74	139
1989	477	105	158	74	140
1990	479	105	160	73	141
1991	480	104	161	73	142
1992	480	104	161	73	142
1993	481	104	161	74	142
1994	477	102	160	73	142
1995	475	101	160	72	142
1996	471	99	159	71	142
1997	468	98	159	70	141
			High alternative projections		
1988	502	111	171	78	142
1989	506	111	174	77	144
1990	513	112	177	77	147
1991	520	114	179	77	150
1992	522	115	180	77	150
1993	525	116	181	77	151
1994	524	116	180	77	151
1995	522	116	180	76	150
1996	519	116	179	74	150
1997	518	117	178	73	150

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 20.—First-professional enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	207	168	15	21	3
1973	218	171	14	30	3
1974	236	179	15	38	4
1975	242	177	15	43	7
1976	244	172	18	48	6
1977	251	173	18	53	7
1978	257	175	17	58	7
1979	263	176	17	63	7
1980	278	181	18	70	9
1981	275	175	18	73	9
1982	278	174	17	78	9
1983	279	169	19	81	10
1984	279	166	19	83	10
1985	274	162	17	84	10
1986*	282	162	19	89	11
1987*	273	158	17	87	11
Middle alternative projections					
1988	278	165	19	85	9
1989	276	163	19	84	10
1990	276	163	19	84	10
1991	276	163	19	84	10
1992	274	161	19	84	10
1993	274	161	19	84	10
1994	271	159	19	83	10
1995	267	156	19	82	10
1996	263	154	19	80	10
1997	260	152	19	79	10
Low alternative projections					
1988	275	163	19	84	9
1989	275	163	19	83	10
1990	272	161	19	82	10
1991	272	161	19	82	10
1992	271	160	19	82	10
1993	271	159	19	83	10
1994	269	158	19	82	10
1995	264	154	19	81	10
1996	260	152	19	79	10
1997	259	151	19	79	10
High alternative projections					
1988	289	170	21	88	10
1989	291	171	21	88	11
1990	291	173	21	86	11
1991	294	175	22	86	11
1992	295	176	22	86	11
1993	299	178	22	88	11
1994	298	179	22	86	11
1995	295	177	22	85	11
1996	294	178	22	83	11
1997	294	179	22	82	11

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 21.—First-professional enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	91	76	3	10	2
1973	97	79	2	15	1
1974	105	81	4	19	1
1975	103	76	6	19	4
1976	101	76	5	23	1
1977	103	75	4	24	2
1978	105	75	3	25	1
1979	106	74	2	27	1
1980	114	79	4	32	2
1981	112	75	3	33	2
1982	113	73	3	35	2
1983	113	71	3	37	2
1984	114	70	3	38	2
1985	111	69	3	38	2
1986*	118	70	3	42	3
1987*	113	68	3	39	3
		Middle alternative projections			
1988	116	71	3	40	2
1989	114	70	3	39	2
1990	114	70	3	39	2
1991	114	70	3	39	2
1992	113	69	3	39	2
1993	113	69	3	39	2
1994	112	68	3	39	2
1995	110	67	3	38	2
1996	108	66	3	37	2
1997	107	65	3	37	2
		Low alternative projections			
1988	114	70	3	39	2
1989	114	70	3	39	2
1990	112	69	3	38	2
1991	112	69	3	38	2
1992	112	69	3	38	2
1993	112	68	3	39	2
1994	111	68	3	38	2
1995	109	66	3	38	2
1996	107	65	3	37	2
1997	107	65	3	37	2
		High alternative projections			
1988	119	73	3	41	2
1989	120	73	3	41	3
1990	120	74	3	40	3
1991	122	75	4	40	3
1992	123	76	4	40	3
1993	124	76	4	41	3
1994	124	77	4	40	3
1995	123	76	4	40	3
1996	122	76	4	39	3
1997	122	77	4	38	3

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Table 22.—First-professional enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1972	116	92	12	11	1
1973	121	92	12	15	2
1974	131	98	11	19	3
1975	140	101	12	23	4
1976	143	99	15	27	5
1977	148	99	15	30	5
1978	152	100	14	32	6
1979	157	102	15	35	6
1980	163	104	16	38	7
1981	162	101	14	40	7
1982	165	101	14	43	7
1983	165	97	16	44	8
1984	164	96	16	43	8
1985	162	93	14	46	8
1986*	163	93	16	47	8
1987*	160	90	14	48	8
		Middle alternative projections			
1988	162	94	16	45	7
1989	162	93	16	45	8
1990	162	93	16	45	8
1991	162	93	16	45	8
1992	161	92	16	45	8
1993	161	92	16	45	8
1994	159	91	16	44	8
1995	157	89	16	44	8
1996	155	88	16	43	8
1997	153	87	16	42	8
		Low alternative projections			
1988	161	93	16	45	7
1989	161	93	16	44	8
1990	160	92	16	44	8
1991	160	92	16	44	8
1992	159	91	16	44	8
1993	159	91	16	44	8
1994	158	90	16	44	8
1995	155	88	16	43	8
1996	153	87	16	42	8
1997	152	86	16	42	8
		High alternative projections			
1988	170	97	18	47	8
1989	171	98	18	47	8
1990	171	99	18	46	8
1991	172	100	18	46	8
1992	172	100	18	46	8
1993	175	102	18	47	8
1994	174	102	18	46	8
1995	172	101	18	45	8
1996	172	102	18	44	8
1997	172	102	18	44	8

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 23.—Full-time-equivalent enrollment in all institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1972	7,254	4,589	1,845	622	198
1973	7,453	4,575	2,003	670	210
1974	7,805	4,686	2,185	709	226
1975	8,480	4,914	2,579	758	229
1976	8,313	4,838	2,461	781	236
1977	8,415	4,919	2,479	776	240
1978	8,348	4,918	2,406	779	248
1979	8,487	4,989	2,469	778	249
1980	8,819	5,109	2,657	790	263
1981	9,015	5,188	2,765	801	262
1982	9,092	5,194	2,841	790	266
1983	9,166	5,254	2,841	805	266
1984	8,952	5,215	2,661	814	263
1985	8,943	5,204	2,649	829	261
1986*	9,039	5,221	2,710	842	266
1987*	8,984	5,161	2,752	792	279
Middle alternative projections					
1988	9,068	5,248	2,728	827	265
1989	9,088	5,255	2,744	827	262
1990	9,080	5,248	2,744	826	262
1991	9,008	5,203	2,717	826	262
1992	8,903	5,132	2,685	826	260
1993	8,803	5,053	2,662	828	260
1994	8,718	4,994	2,648	819	257
1995	8,678	4,970	2,645	810	253
1996	8,677	4,974	2,652	802	249
1997	8,713	5,004	2,664	798	246
Low alternative projections					
1988	8,865	5,111	2,672	820	262
1989	8,887	5,118	2,689	819	261
1990	8,824	5,077	2,670	819	258
1991	8,707	5,002	2,626	821	258
1992	8,553	4,897	2,580	819	257
1993	8,441	4,807	2,557	820	257
1994	8,350	4,743	2,539	813	255
1995	8,324	4,731	2,538	805	250
1996	8,332	4,740	2,550	796	246
1997	8,382	4,782	2,566	789	245
High alternative projections					
1988	9,288	5,357	2,797	860	274
1989	9,374	5,399	2,834	865	276
1990	9,409	5,413	2,848	872	276
1991	9,366	5,378	2,827	883	278
1992	9,278	5,311	2,802	886	279
1993	9,193	5,237	2,782	891	283
1994	9,127	5,183	2,772	890	282
1995	9,090	5,160	2,767	884	279
1996	9,106	5,170	2,779	879	278
1997	9,155	5,205	2,793	879	278

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 24.—Full-time-equivalent enrollment in public institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1972	5,453	3,187	1,745	432	89
1973	5,630	3,171	1,896	468	96
1974	5,945	3,259	2,083	501	102
1975	6,522	3,428	2,465	532	98
1976	6,350	3,369	2,348	535	101
1977	6,396	3,416	2,356	523	101
1978	6,279	3,387	2,272	519	101
1979	6,393	3,438	2,332	519	103
1980	6,642	3,524	2,484	522	113
1981	6,781	3,576	2,573	524	110
1982	6,851	3,597	2,629	514	110
1983	6,881	3,635	2,616	520	111
1984	6,685	3,610	2,442	522	111
1985	6,668	3,601	2,428	529	110
1986*	6,742	3,621	2,463	543	115
1987*	6,701	3,555	2,514	514	118
			Middle alternative projections		
1988	6,785	3,637	2,503	531	114
1989	6,805	3,643	2,519	531	112
1990	6,800	3,638	2,520	530	112
1991	6,745	3,607	2,495	531	112
1992	6,665	3,557	2,466	531	111
1993	6,592	3,503	2,446	532	111
1994	6,534	3,463	2,434	527	110
1995	6,504	3,446	2,429	521	108
1996	6,507	3,448	2,437	516	106
1997	6,535	3,470	2,447	513	105
			Low alternative projections		
1988	6,635	3,543	2,454	526	112
1989	6,655	3,548	2,469	526	112
1990	6,608	3,520	2,452	526	110
1991	6,519	3,468	2,413	528	110
1992	6,405	3,396	2,373	526	110
1993	6,322	3,334	2,351	527	110
1994	6,256	3,289	2,336	522	109
1995	6,240	3,281	2,335	517	107
1996	6,248	3,287	2,345	511	105
1997	6,286	3,316	2,358	507	105
			High alternative projections		
1988	6,950	3,713	2,568	552	117
1989	7,019	3,743	2,603	556	117
1990	7,045	3,753	2,616	559	117
1991	7,012	3,728	2,599	566	119
1992	6,948	3,683	2,577	568	120
1993	6,883	3,632	2,558	572	121
1994	6,833	3,594	2,548	570	121
1995	6,811	3,579	2,545	567	120
1996	6,823	3,586	2,555	563	119
1997	6,859	3,609	2,567	564	119

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987. (This table was prepared November 1987.)

Table 25.—Full-time-equivalent enrollment in private institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1972	1,801	1,402	100	190	109
1973	1,824	1,404	107	202	114
1974	1,861	1,427	102	208	124
1975	1,957	1,486	114	226	131
1976	1,963	1,469	113	246	135
1977	2,019	1,503	123	253	139
1978	2,069	1,531	134	259	146
1979	2,095	1,551	137	259	146
1980	2,177	1,585	173	268	150
1981	2,233	1,612	192	277	152
1982	2,241	1,597	212	276	156
1983	2,285	1,619	225	285	155
1984	2,267	1,604	219	292	152
1985	2,276	1,603	221	300	151
1986*	2,297	1,600	247	299	151
1987*	2,282	1,606	238	278	160
		Middle alternative projections			
1988	2,282	1,611	224	296	151
1989	2,284	1,613	225	296	150
1990	2,280	1,610	225	295	150
1991	2,263	1,596	222	295	150
1992	2,238	1,575	219	295	149
1993	2,211	1,550	216	296	149
1994	2,185	1,531	214	293	147
1995	2,173	1,524	215	289	145
1996	2,169	1,525	215	286	143
1997	2,178	1,535	217	285	141
		Low alternative projections			
1988	2,230	1,568	219	293	150
1989	2,232	1,570	220	293	149
1990	2,216	1,558	217	293	148
1991	2,187	1,534	213	292	148
1992	2,148	1,501	208	292	147
1993	2,119	1,473	206	293	147
1994	2,094	1,454	204	290	146
1995	2,084	1,450	203	288	143
1996	2,084	1,453	205	285	141
1997	2,095	1,466	207	282	140
		High alternative projections			
1988	2,337	1,643	229	308	157
1989	2,354	1,656	231	309	158
1990	2,362	1,660	232	312	158
1991	2,354	1,650	229	316	159
1992	2,331	1,628	226	318	159
1993	2,310	1,605	224	319	162
1994	2,293	1,589	224	319	161
1995	2,281	1,581	223	318	159
1996	2,282	1,584	224	315	159
1997	2,296	1,596	226	315	159

*Estimate.

NOTE: Projections are based on data through 1986. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1986 and 1987.(This table was prepared November 1987.)

Chapter 3

Public High School Graduates

The number of children born 18 years earlier is an excellent indicator of the number of public high school graduates (figure 20), although other factors may influence the number of graduates (for example, education reforms). For the period 1972–73 to 1986–87, estimating public high school graduates as 65 percent of births 18 years earlier would have been within 3 percent of the actual number each year. This is true despite all the changes that have taken place in public schools during this decade. Although many factors influence graduation rates, the net cumulative effect has been remarkably stable over the past 15 years (figure 21).

When the number of public high school graduates as a percent of the 18-year-old population is compared with graduates as a percent of births 18 years earlier (table 26), some interesting things emerge. First, as expected, there is a similarity between the two. Both decrease until the middle of the period, and then both increase until the end. Second, from 1972–73 to 1978–79, public high school graduates as a percent of births was less than public high school graduates as a percent of the 18-year-old population. However, by 1979–80 the situation had reversed. The 18-year-old population became greater than the number of births 18 years earlier. Immigration is apparently the reason.

The number of public high school graduates rose from 2.730 million in 1972–73 to an all-time high of 2.840 million in 1976–77 (table 26). The number then fell for the next 9 years, just as the number of births had 18 years before (from 1959 to 1967). Following an increase in 1986–87, the National Center for Education Statistics (NCES) forecasts increases in 1987–88 and 1988–89. The number of public high school graduates will then decrease to 2.243 million in 1991–92, its lowest point since 1965. Then just as the number of births increased from 1974 to 1979, the number of graduates will increase to 2.547 million in 1997–98.

Public high school graduates as a percent of the 18-year-old population decreased from 68.1 percent in 1972–73 to 64.0 percent in 1979–80 (table 26). It increased to 64.9 percent in 1981–82, dropped to 64.1 the following year, then it rose to 67.1 in 1986–87. NCES forecasts that public high school graduates as a percent of the 18-year-old population will increase steadily from 66.8 percent in 1987–88 to 70.4 percent in 1997–98 (figure 21).

The reader is cautioned against concluding that only 66 percent of American children complete high school. Although insufficient data exist for NCES to calculate forecasts of private high school graduates, it is estimated that the number of private high school graduates is about 11 percent of public high school graduates. When these estimates of private high school graduates are added to the public high school graduates, total high school graduates as a percent of the 18-year-old population is about 74 percent for 1986–87.

Figure 20.—Public high school graduates, with projections: 1972-73 to 1997-98

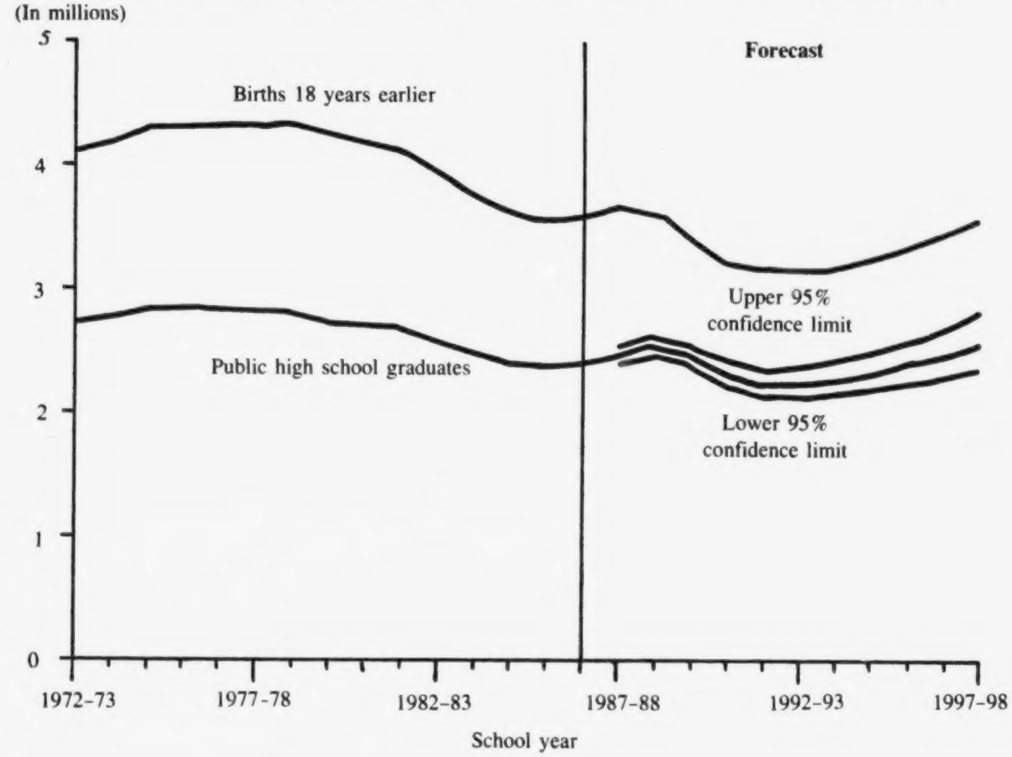


Figure 21.—Public high school graduates as a percent of the mean number of 17- and 18-year-olds, with projections: 1972-73 to 1997-98

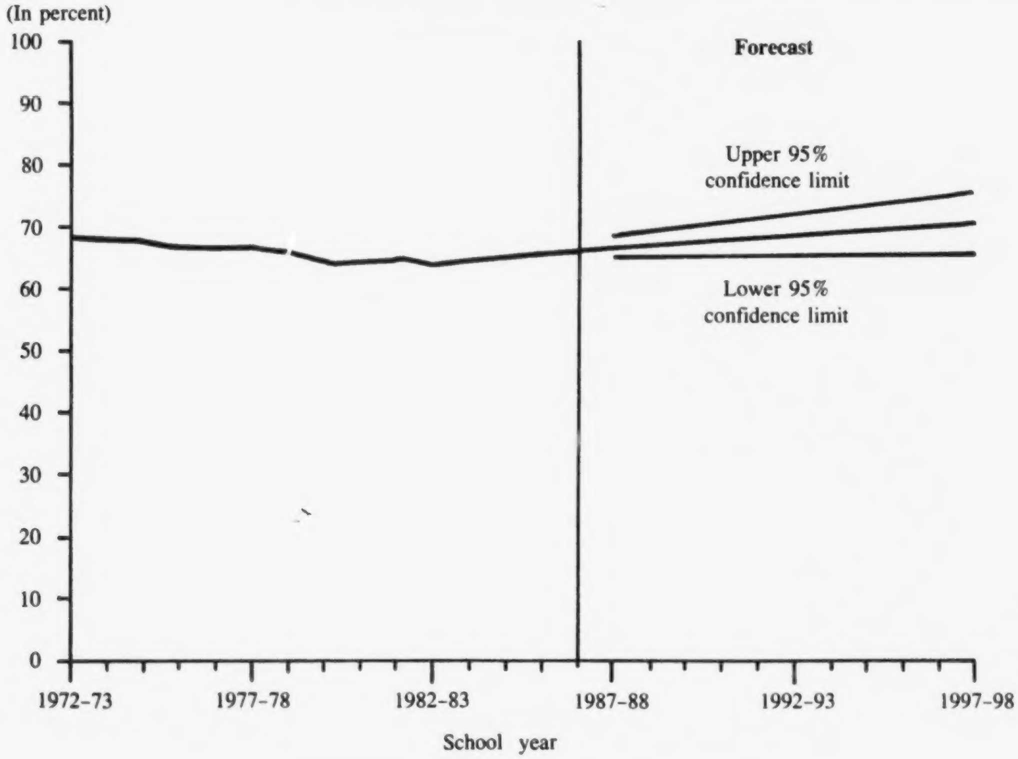


Table 26.—Public high school graduates, 18-year-old population[1], and births 18 years earlier[2], with forecasts: 1972–73 to 1997–98

Year	High school graduates	18-year-old population	Births lagged 18 years	High school graduates as a percent of	
	Numbers, in thousands			18-year-old population	Births lagged 18 years
1972-73	2,730	4,007	4,115	68.1	66.3
1973-74	2,763	4,074	4,186	67.8	66.0
1974-75	2,823	4,179	4,288	67.6	65.8
1975-76	2,837	4,265	4,306	66.5	65.9
1976-77	2,840	4,271	4,296	66.5	66.1
1977-78	2,825	4,263	4,310	66.3	65.5
1978-79	2,817	4,296	4,312	65.6	65.3
1979-80	2,748	4,296	4,265	64.0	64.4
1980-81	2,725	4,234	4,178	64.4	65.2
1981-82	2,705	4,170	4,106	64.9	65.9
1982-83	2,598	4,055	3,936	64.1	66.0
1983-84	2,495	3,862	3,722	64.6	67.0
1984-85	2,414	3,706	3,599	65.1	67.1
1985-86	2,382	3,619	3,545	65.8	67.2
1986-87	[3]2,428	3,618	3,581	67.1	67.8
			Forecast		
1987-88	2,468	3,696	3,683	66.8	67.0
1988-89	2,536	3,777	3,648	67.1	69.5
1989-90	2,472	3,662	3,407	67.5	72.5
1990-91	2,320	3,418	3,198	67.9	72.5
1991-92	2,243	3,287	3,149	68.2	71.2
1992-93	2,254	3,287	3,152	68.6	71.5
1993-94	2,274	3,298	3,156	69.0	72.1
1994-95	2,321	3,348	3,248	69.3	71.5
1995-96	2,393	3,434	3,330	69.7	71.9
1996-97	2,452	3,501	3,414	70.0	71.8
1997-98	2,547	3,618	3,553	70.4	71.7

[1] The number of 18-year-olds at their nearest birthday was computed as the average of the 17- and 18-year-old population.

[2] The number of births 18 years earlier was calculated as the average of the number of births 17 and 18 years earlier.

[3] Estimate.

SOURCES: U.S. Department of Education, Center for Education Statistics, Common Core of Data survey. U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25. (This table was prepared December 1987.)

Chapter 4

Earned Degrees Conferred

Over the past 15 years, the number of degrees awarded increased at all levels. Most notable is the rise in number of degrees awarded to women. For each degree level, the number of degrees awarded to men declined. In contrast, the number of degrees awarded to women increased greatly during the 1970s and 1980s. In 1986-87, women earned the majority of associate, bachelor's, and master's degrees and one-third of doctor's and first-professional degrees.

Associate Degrees

Between 1972-73 and 1986-87, the number of associate degrees rose more than 35 percent, from 316,000 to 427,000 (table 27 and figure 22). The number is expected to decrease to 408,000 by 1997-98. While the number of associate degrees awarded to men is projected to fall 6 percent by 1997-98, those awarded to women by 1989-90 will increase before decreasing to 232,000 by 1997-98, a 3 percent decline from 1986-87 (figures 23 and 24).

Bachelor's Degrees

The number of bachelor's degrees rose from 922,000 in 1972-73 to 987,000 in 1986-87, an increase of 7 percent (table 28 and figure 25). This number is expected to fall 7 percent to 916,000 by 1997-98. While the number of bachelor's degrees awarded to men fell between 1972-73 and 1986-87, the number awarded to women rose 27 percent (figures 26 and 27). The proportion awarded to women rose from 44 percent in 1972-73 to more than 50 percent in 1986-87. For the rest of the 1990s, more than half of the bachelor's degrees are projected to be awarded to women.

Master's Degrees

The number of master's degrees awarded increased in the mid-1970s, peaking at 317,000 in 1976-77 (table 29 and figure 28). This number then fell to 284,000 in 1983-84 before rising to 291,000 in 1986-87. From 1986-87 to 1997-98, this number is expected to remain stable at around 290,000. Again, women represented an increasing share of master's degrees awarded, rising from 41 percent in 1972-73 to 51 percent in 1986-87. This proportion is expected to reach 52 percent by 1997-98 (figures 29 and 30).

Doctor's Degrees

The number of doctor's degrees decreased slightly from 34,800 in 1972-73 to 34,200 in 1986-87 (table 30 and figure 31). Over the projection period, this number is expected to increase from 34,200 in 1986-87 to 34,700 in 1997-98. Most notable are the contrasting trends between men and women. While the number of degrees awarded to men fell from 28,600 in 1972-73 to 22,100 in 1986-87, the number of degrees awarded to women rose 95 percent, from 6,200 to 12,100 for the same period (figures 32 and 33). In the 1990s, this pattern is expected to continue. The share of doctor's degrees awarded to women, which was 18 percent in 1972-73 and 35 percent in 1986-87, is projected to climb to 46 percent by 1997-98.

First-Professional Degrees

The number of first-professional degrees awarded rose from 50,000 in 1972-73 to 73,700 in 1986-87, an increase of 47 percent (table 31 and figure 34). While the number of degrees awarded to men declined, the women's proportion rose from 7 percent in 1972-73 to 35 percent in 1986-87 (figures 35 and 36). By 1997-98, this proportion is expected to be 43 percent.

Figure 22.—Associate degrees, with projections: 1972-73 to 1997-98

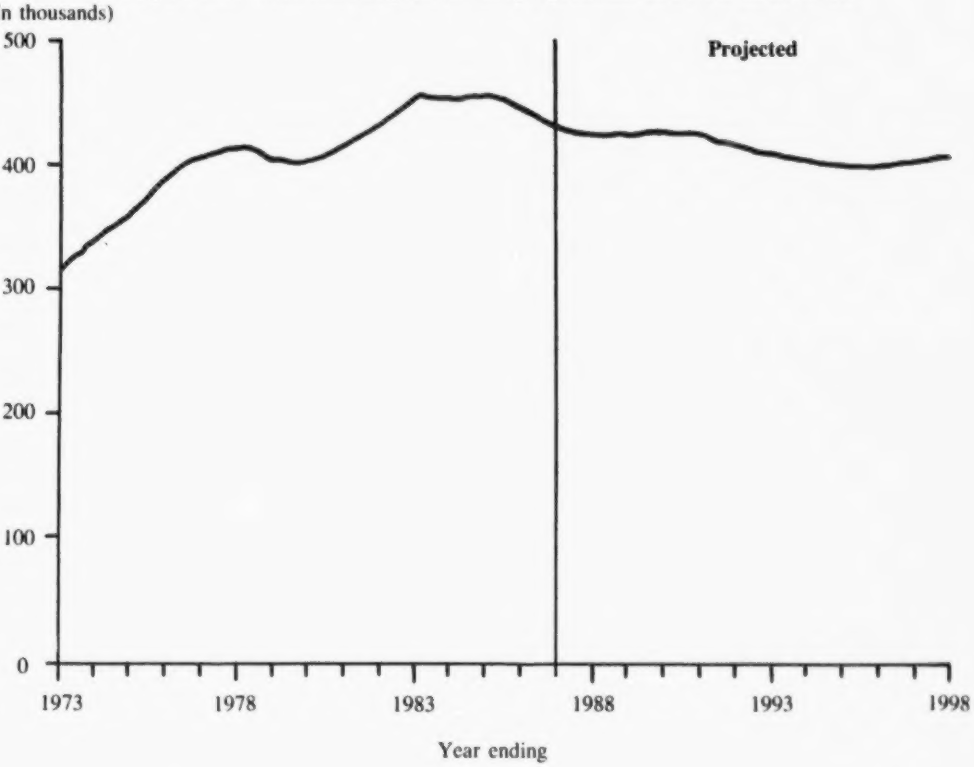


Figure 23.—Associate degrees awarded to men, with projections: 1972-73 to 1997-98

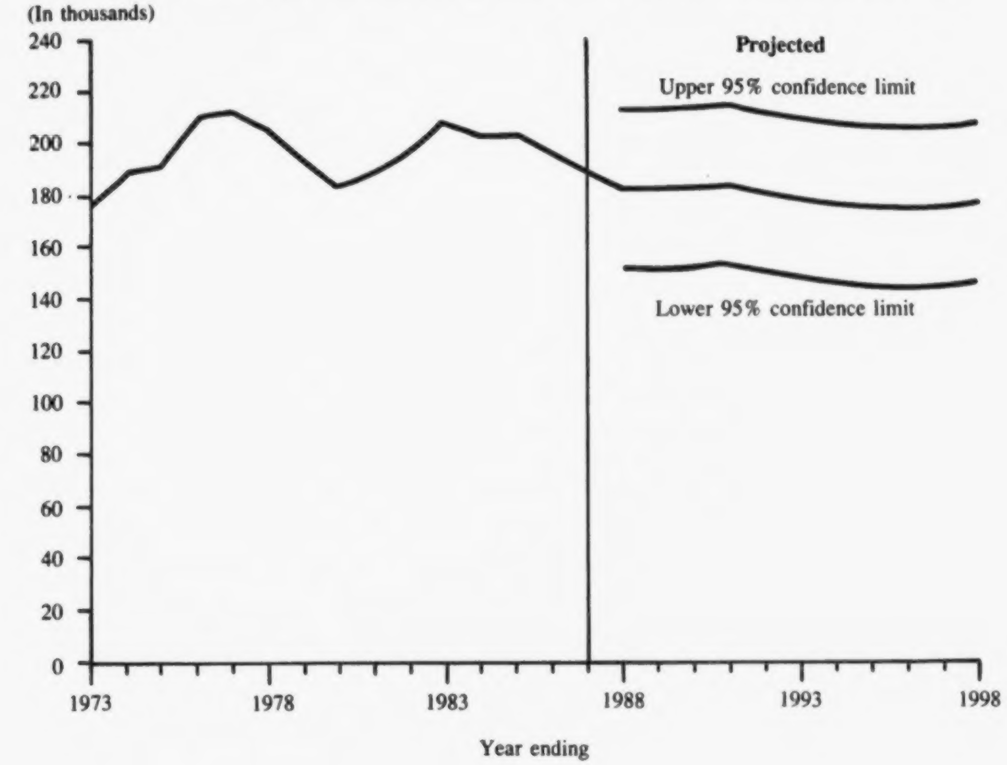


Figure 24.—Associate degrees awarded to women, with projections: 1972-73 to 1997-98

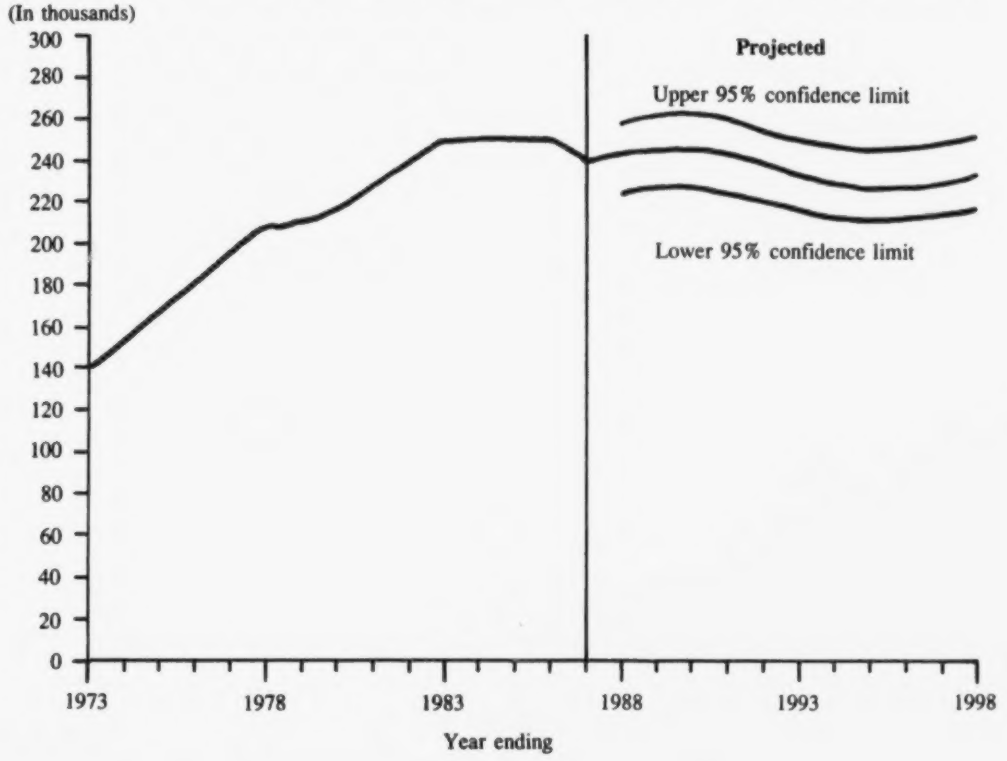


Figure 25.—Bachelor's degrees, with projections: 1972-73 to 1997-98

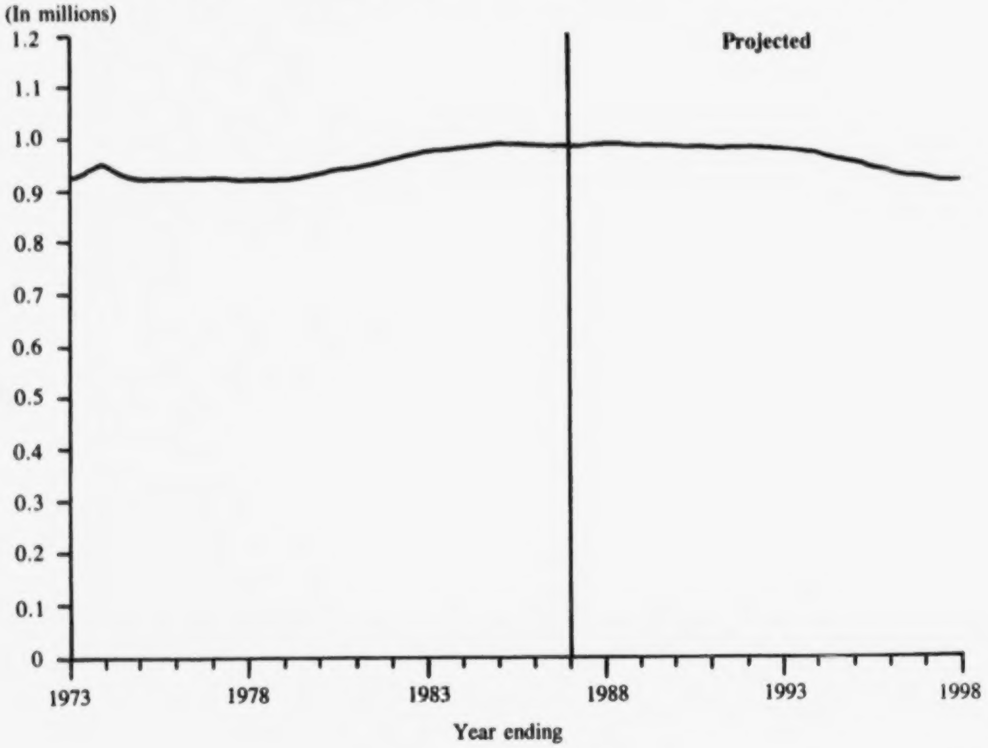


Figure 26.—Bachelor's degrees awarded to men, with projections: 1972–73 to 1997–98

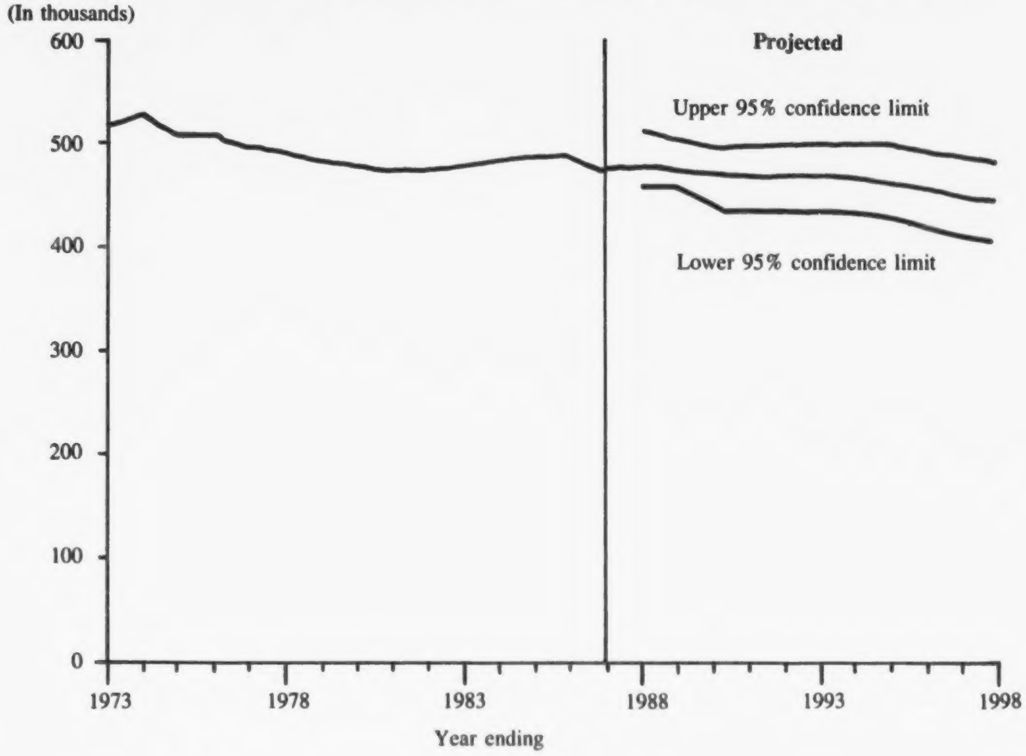


Figure 27.—Bachelor's degrees awarded to women, with projections: 1972–73 to 1997–98

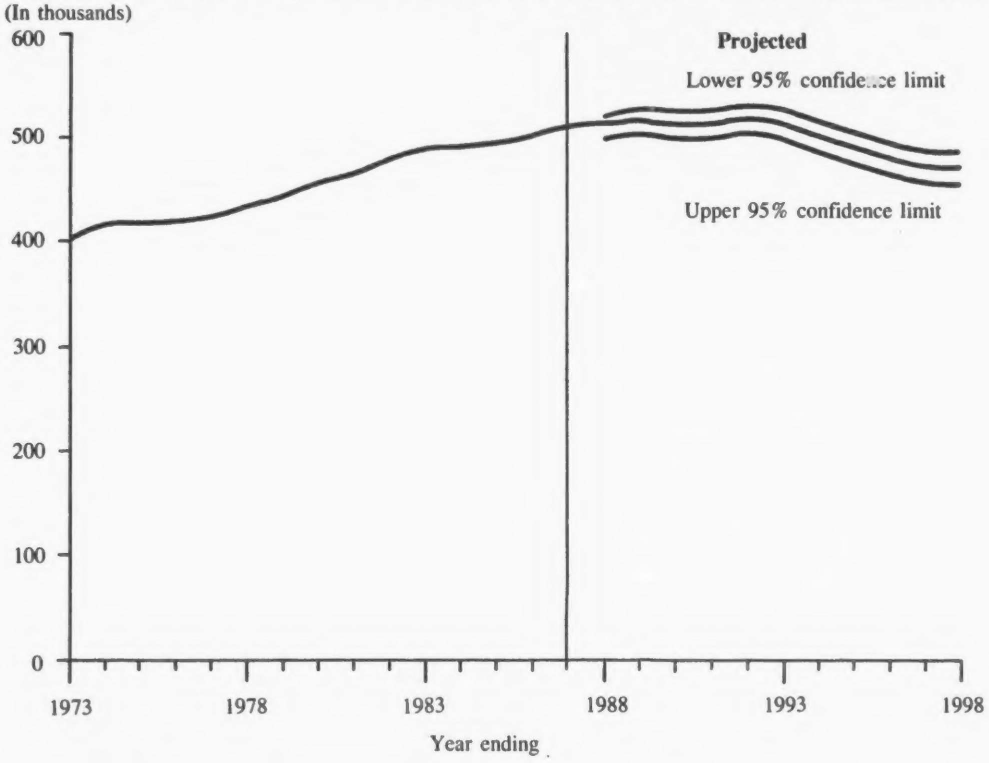


Figure 28.—Master's degrees, with projections: 1972-73 to 1997-98

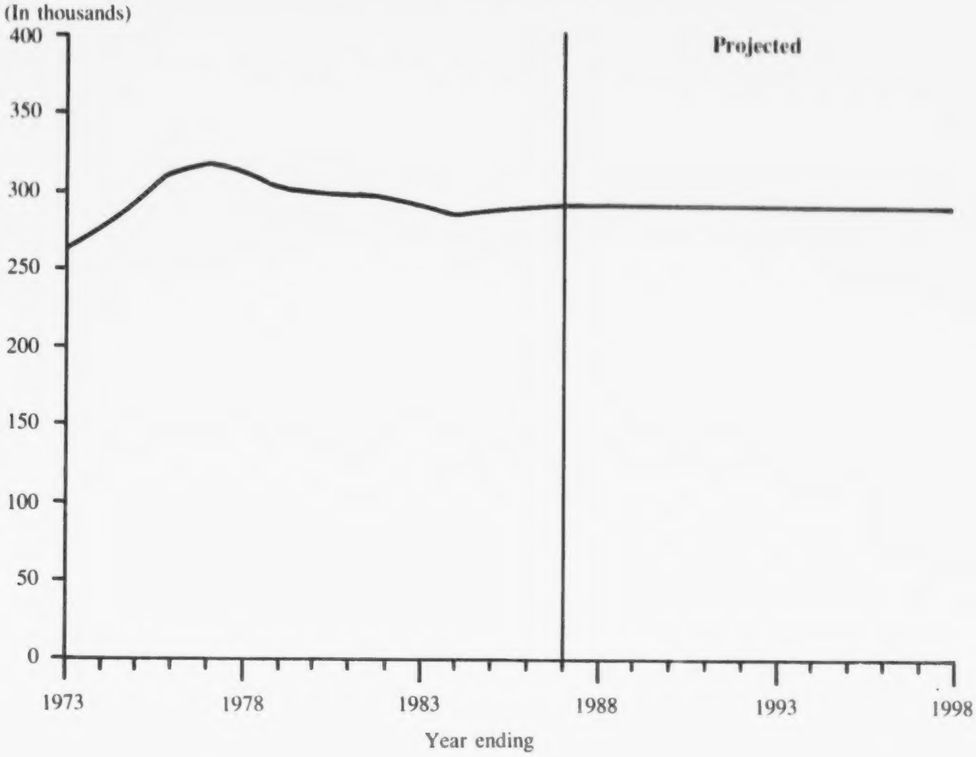


Figure 29.—Master's degrees awarded to men, with projections: 1972-73 to 1997-98

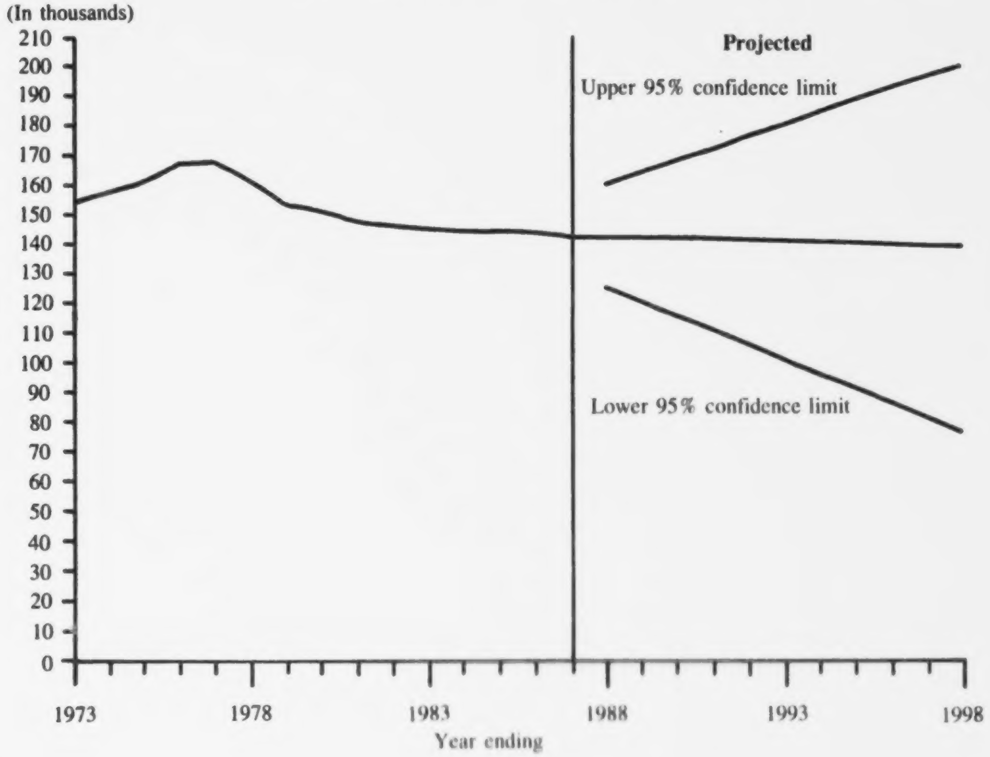


Figure 30.—Master's degrees awarded to women, with projections: 1972-73 to 1997-98

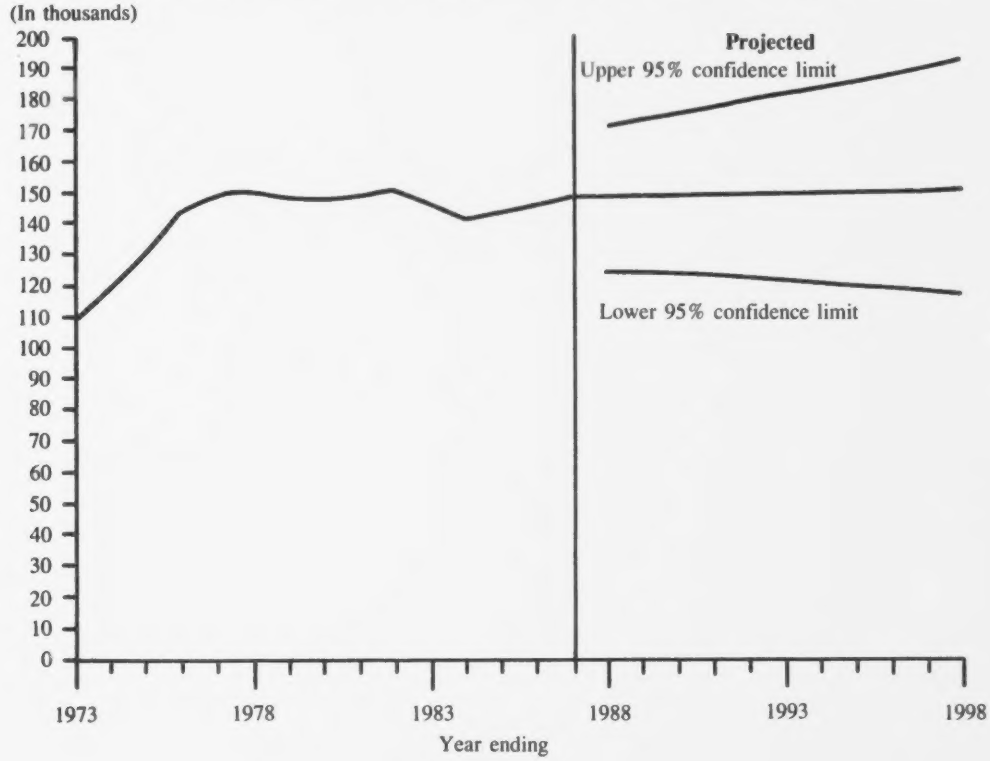


Figure 31.—Doctor's degrees, with projections: 1972-73 to 1997-98

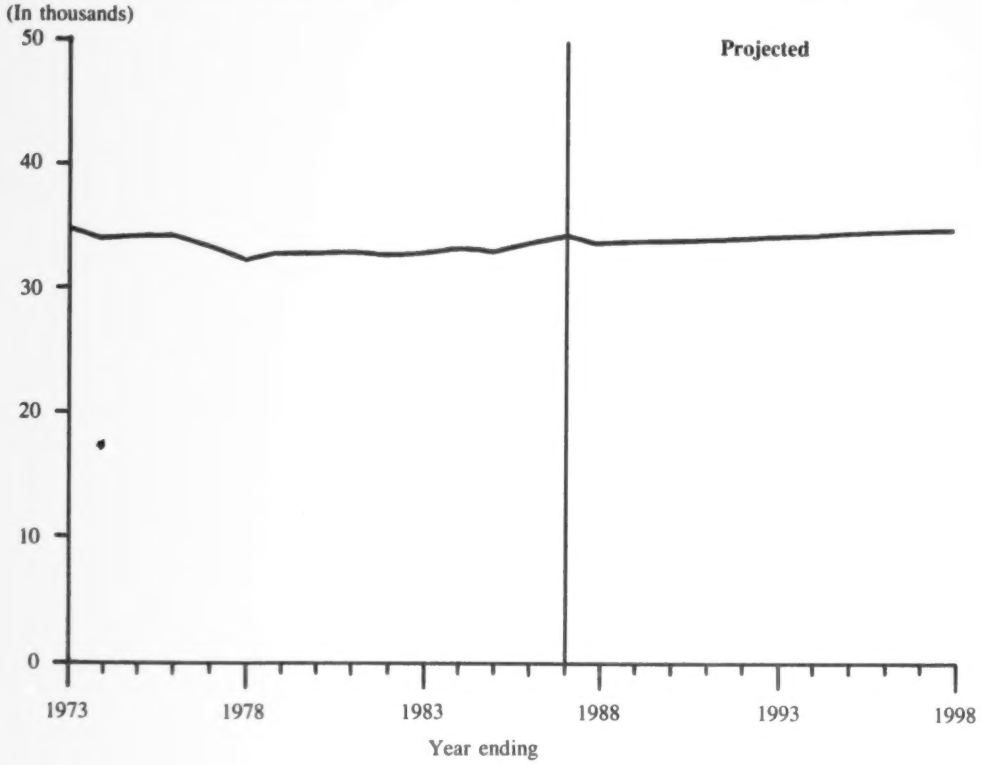


Figure 32.—Doctor's degrees awarded to men, with projections: 1972-73 to 1997-98

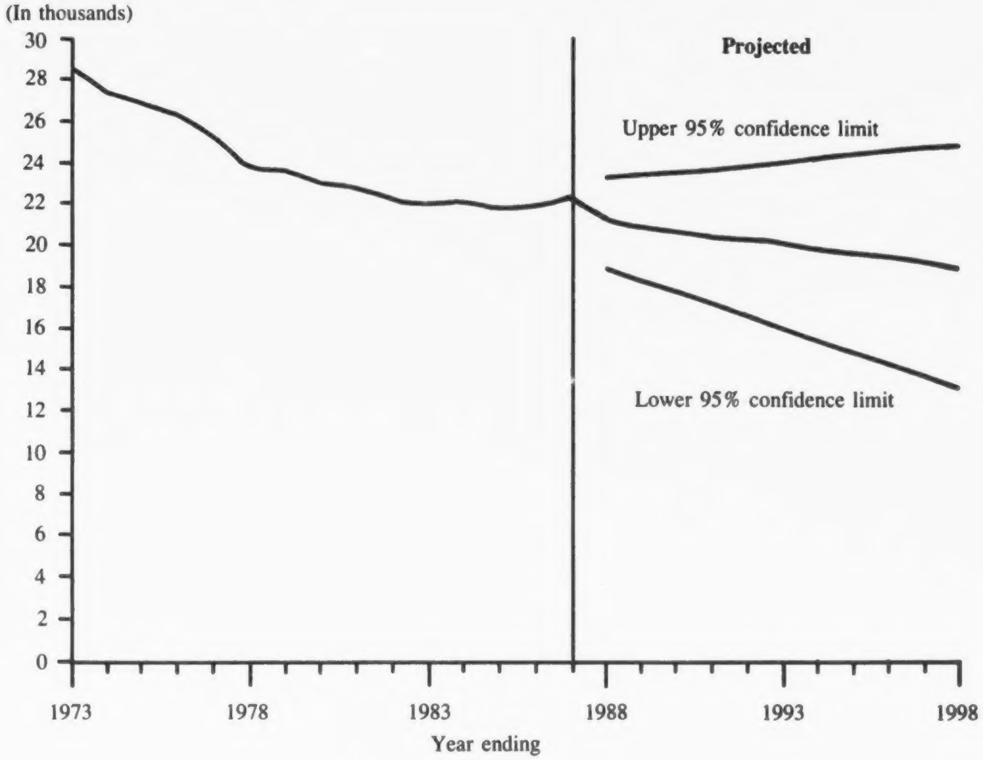


Figure 33.—Doctor's degrees awarded to women, with projections: 1972-73 to 1997-98

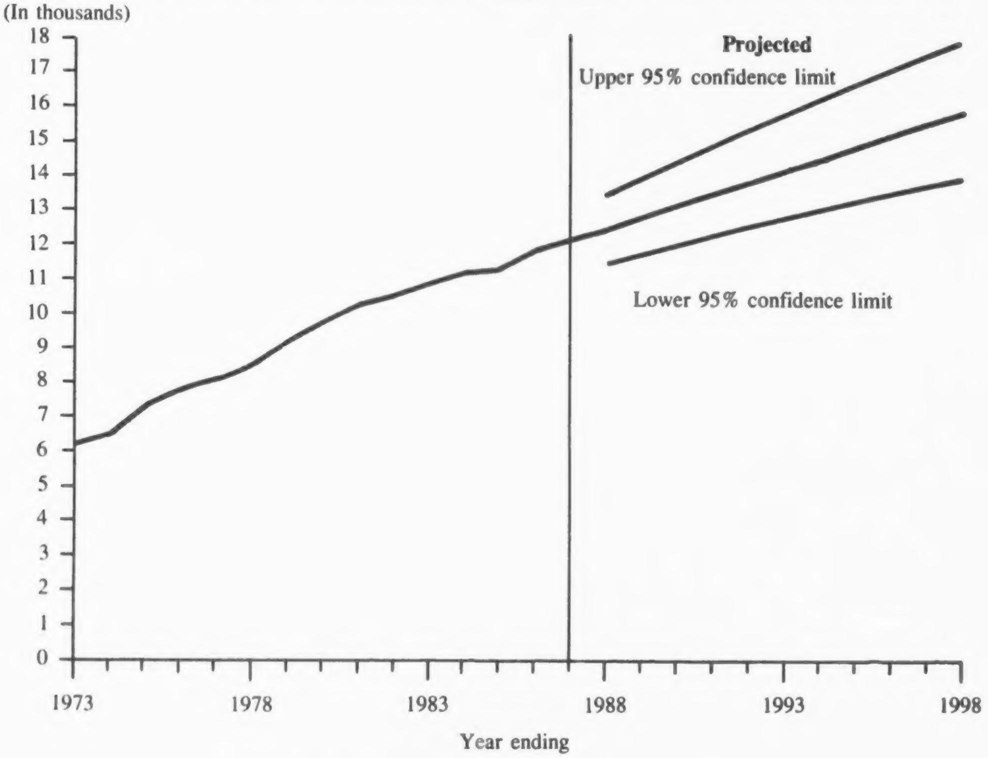


Figure 34.—First-professional degrees, with projections: 1972-73 to 1997-98

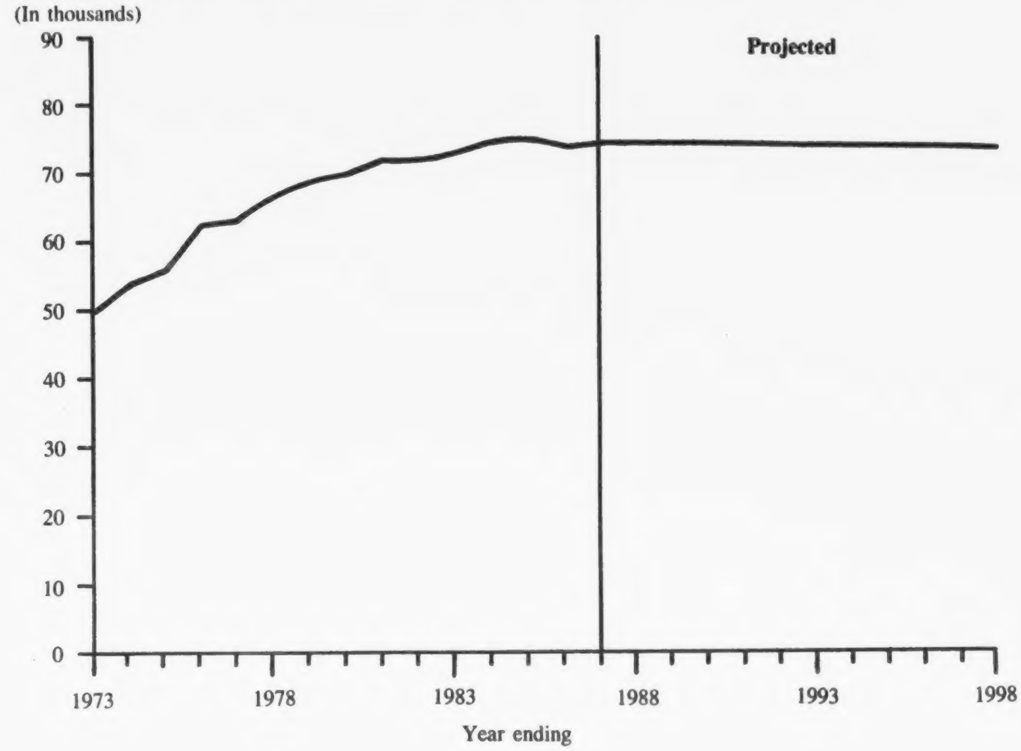


Figure 35.—First-professional degrees awarded to men, with projections: 1972-73 to 1997-98

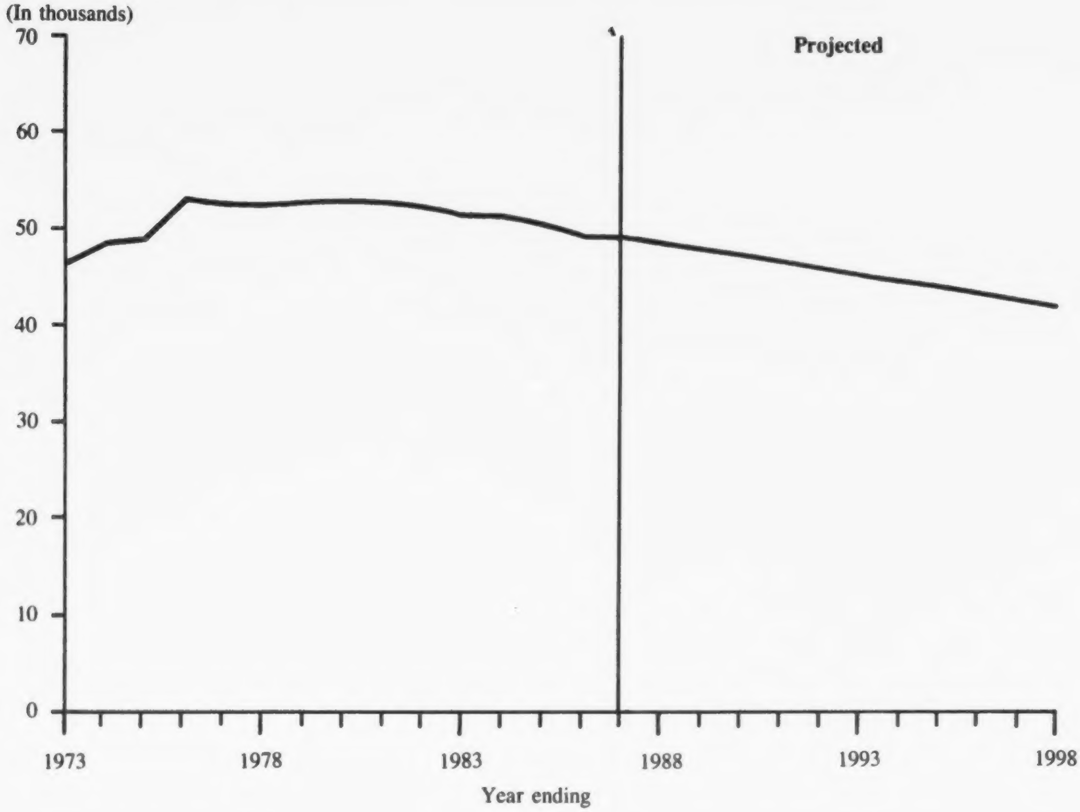


Figure 36.—First-professional degrees awarded to women, with projections: 1972-73 to 1997-98

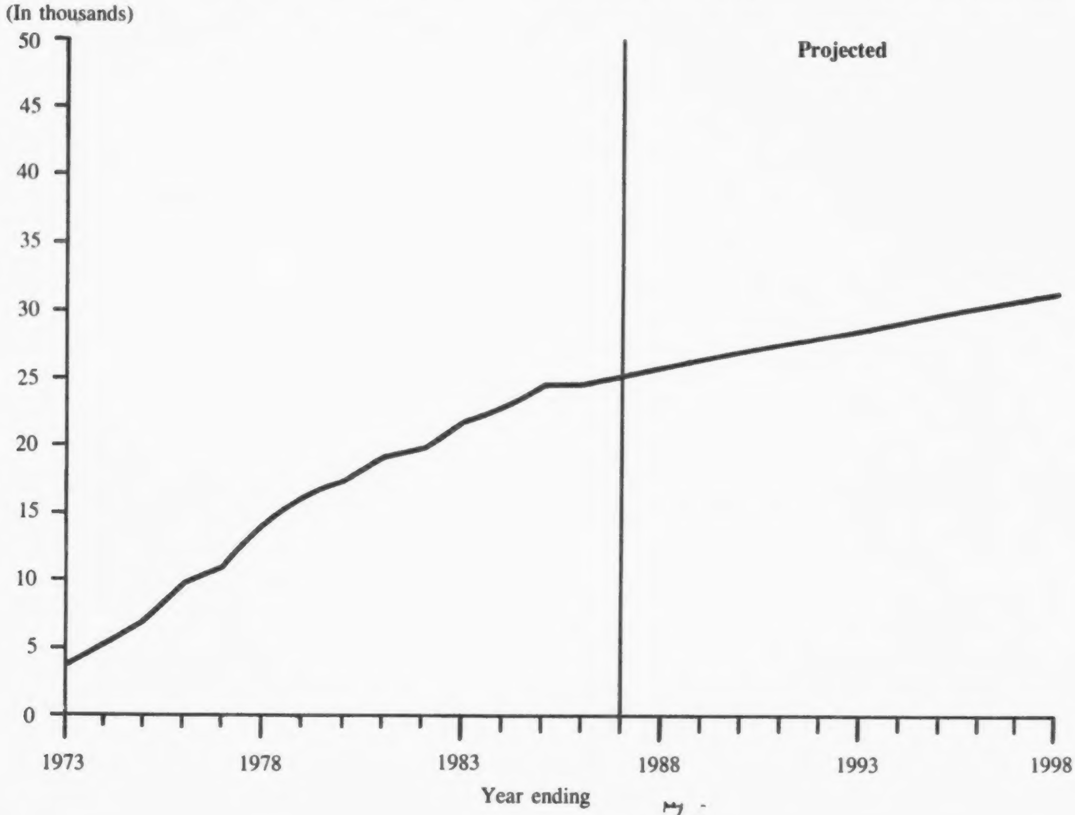


Table 27.—Associate degrees, by sex of recipient, with projections: 50 States and D.C., 1972-73 to 1997-98

Year	Total	Men	Women
1972-73	316,174	175,413	140,761
1973-74	343,924	188,591	155,333
1974-75	360,171	191,017	169,154
1975-76	391,454	209,996	181,458
1976-77	406,377	210,842	195,535
1977-78	412,246	204,718	207,528
1978-79	402,702	192,091	210,611
1979-80	400,910	183,737	217,173
1980-81	416,377	188,638	227,739
1981-82	434,515	196,939	237,576
1982-83	456,441	207,141	249,300
1983-84	452,416	202,762	249,654
1984-85	454,712	202,932	251,780
1985-86	446,047	196,166	249,881
1986-87*	427,000	188,000	240,000
		Projected	
1987-88	424,000	182,000	242,000
1988-89	425,000	181,000	244,000
1989-90	427,000	182,000	245,000
1990-91	426,000	183,000	243,000
1991-92	417,000	180,000	237,000
1992-93	410,000	178,000	232,000
1993-94	404,000	176,000	228,000
1994-95	402,000	175,000	227,000
1995-96	401,000	174,000	227,000
1996-97	404,000	175,000	229,000
1997-98	408,000	176,000	232,000

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table 28.—Bachelor's degrees, by sex of recipient, with projections: 50 States and D.C., 1972-73 to 1997-98

Year	Total	Men	Women
1972-73	922,362	518,191	404,171
1973-74	945,776	527,313	418,463
1974-75	922,933	504,841	418,092
1975-76	925,746	504,925	420,821
1976-77	919,549	495,545	424,004
1977-78	921,204	487,347	433,857
1978-79	921,390	477,344	444,046
1979-80	929,417	473,611	455,806
1980-81	935,140	469,883	465,257
1981-82	952,998	473,364	479,634
1982-83	969,510	479,140	490,370
1983-84	974,309	482,319	491,990
1984-85	979,477	482,528	496,949
1985-86	987,823	485,923	501,900
1986-87*	987,000	475,000	512,000
		Projected	
1987-88	989,000	474,000	515,000
1988-89	989,000	472,000	517,000
1989-90	984,000	471,000	513,000
1990-91	981,000	467,000	514,000
1991-92	984,000	466,000	518,000
1992-93	981,000	467,000	514,000
1993-94	969,000	465,000	504,000
1994-95	954,000	462,000	492,000
1995-96	937,000	456,000	481,000
1996-97	923,000	450,000	473,000
1997-98	916,000	445,000	471,000

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table 29.—Master's degrees, by sex of recipient, with projections: 50 States and D.C., 1972-73 to 1997-98

Year	Total	Men	Women
1972-73	263,371	154,468	108,903
1973-74	277,033	157,842	119,191
1974-75	292,450	161,570	130,880
1975-76	311,771	167,248	144,523
1976-77	317,164	167,783	149,381
1977-78	311,620	161,212	150,408
1978-79	301,079	153,370	147,709
1979-80	298,081	150,749	147,332
1980-81	295,739	147,043	148,696
1981-82	295,546	145,532	150,014
1982-83	289,921	144,697	145,224
1983-84	284,263	143,595	140,668
1984-85	286,251	143,390	142,861
1985-86	288,567	143,508	145,059
1986-87*	291,000	142,000	148,000
		Projected	
1987-88	290,000	142,000	148,000
1988-89	290,000	142,000	148,000
1989-90	290,000	142,000	148,000
1990-91	289,000	141,000	148,000
1991-92	290,000	141,000	149,000
1992-93	289,000	140,000	149,000
1993-94	289,000	140,000	149,000
1994-95	290,000	140,000	150,000
1995-96	289,000	139,000	150,000
1996-97	289,000	139,000	150,000
1997-98	290,000	139,000	151,000

*Estimate.

NOTE: Projections are based on data through 1985-86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table 30.—Doctor's degrees, by sex of recipient, with projections: 50 States and D.C., 1972-73 to 1997-98

Year	Total	Men	Women
1972-73	34,777	28,571	6,206
1973-74	33,816	27,365	6,451
1974-75	34,083	26,817	7,266
1975-76	34,064	26,267	7,797
1976-77	33,232	25,142	8,090
1977-78	32,131	23,658	8,473
1978-79	32,730	23,541	9,189
1979-80	32,615	22,943	9,672
1980-81	32,958	22,711	10,247
1981-82	32,707	22,224	10,483
1982-83	32,775	21,902	10,873
1983-84	33,209	22,064	11,145
1984-85	32,943	21,700	11,243
1985-86	33,653	21,819	11,834
1986-87*	34,200	22,100	12,100
		Projected	
1987-88	33,500	21,100	12,400
1988-89	33,600	20,800	12,800
1989-90	33,700	20,600	13,100
1990-91	33,900	20,400	13,500
1991-92	34,000	20,200	13,800
1992-93	34,200	20,000	14,200
1993-94	34,200	19,700	14,500
1994-95	34,400	19,500	14,900
1995-96	34,500	19,300	15,200
1996-97	34,700	19,100	15,600
1997-98	34,700	18,800	15,900

*Estimate.

NOTE: Projections are based on data through 1985-86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table 31.—First-professional degrees, by sex of recipient, with projections: 50 States and D.C., 1972-73 to 1997-98

Year	Total	Men	Women
1972-73	50,018	46,489	3,529
1973-74	53,816	48,530	5,286
1974-75	55,916	48,956	6,960
1975-76	62,649	52,892	9,757
1976-77	63,359	52,374	10,985
1977-78	66,581	52,270	14,311
1978-79	68,848	52,652	16,196
1979-80	70,131	52,716	17,415
1980-81	71,956	52,792	19,164
1981-82	72,032	52,223	19,809
1982-83	73,136	51,310	21,826
1983-84	74,407	51,334	23,073
1984-85	75,063	50,455	24,608
1985-86	73,910	49,261	24,649
1986-87*	73,700	48,100	25,700
		Projected	
1987-88	74,400	48,600	25,800
1988-89	74,300	47,900	26,400
1989-90	74,300	47,300	27,000
1990-91	74,200	46,700	27,500
1991-92	74,100	46,000	28,100
1992-93	74,100	45,400	28,700
1993-94	73,900	44,700	29,200
1994-95	73,900	44,100	29,800
1995-96	73,900	43,500	30,400
1996-97	73,700	42,800	30,900
1997-98	73,700	42,200	31,500

*Estimate.

NOTE: Projections are based on data through 1985-86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Chapter 5

Public Classroom Teachers

Three alternative forecasts of public classroom teachers were calculated for this publication: high, middle, and low. These alternatives were based on different assumptions about the growth in revenue receipts from State sources. The slowest growth (from 1.3 to 1.9 percent) was assumed for the low alternative. A growth rate of 2.9 was used for the middle alternative. The high alternative contained the most optimistic assumption for the growth rate (4.8 percent) in revenue receipts from State sources. The same assumptions were used to generate the alternative forecasts for elementary and secondary school expenditures and average teacher salaries.

Elementary and Secondary School Teachers

The relationship between the number of teachers and the number of pupils in public schools is not as direct as might be imagined. While it is generally true that as enrollment increases so does the number of teachers, it is not true as a rule that as enrollment decreases so does the number of teachers. The reasons for this are varied but include factors such as class size policies and special education.

The number of classroom teachers increased from 2.103 million in 1972 to 2.209 million in 1977 (table 32), despite an enrollment decline of 2.167 million students over the same period. From 1977 to 1982 the number of teachers decreased to 2.110 million. Following this came successive increases to 2.243 million in 1986. Enrollments, however, were still falling, but bottomed out in 1984 and then began rising again. The National Center for Education Statistics (NCES) forecasts that the number of teachers, like enrollments, will continue to increase from 1987 to 1997 (figure 37).

Elementary School Teachers

The number of classroom teachers in public elementary schools rose from 1.140 million in 1972 to 1.190 million in 1978 and 1979 (table 32). It fell to 1.155 million in 1981 but then rose again to 1.267 million in 1986. However, enrollment decreased during the period 1972 to 1982, and then began increasing again.

NCES forecasts a continued climb in the number of elementary teachers just as enrollment will increase. However, under both the middle and the low alternatives, the teacher-pupil ratios will decline at the beginning of the forecast period, before increasing again towards the mid-1990s (figure 39). All three alternatives project the number of elementary teachers reaching all-time highs in 1997 (figure 37), ranging from 1.433 million under the low alternative, to 1.587 million under the high alternative.

Secondary School Teachers

As secondary enrollments increased from 18.421 million in 1972 to 19.151 million in 1975, the number of secondary teachers increased from 963,000 to 1.016 million (table 32). However, when secondary enrollments started decreasing in 1976, the number of teachers continued to increase, reaching a peak of 1.024 million 2 years later. From 1978 to 1982, both enrollments and the number of teachers decreased in secondary schools, but the teacher-pupil ratios continued to rise (figure 39). In 1983 and 1984 the number of teachers rose by 13,000 while enrollments declined by 631,000. Two years of increases followed in 1985 and 1986 for both enrollments and teachers.

Enrollments are expected to fall from 15.078 million in 1987 to 14.457 in 1990 at which point they are expected to rise again, reaching 16.637 million in 1997. All three alternatives project similar patterns for the number of teachers (figure 37). Under the middle alternative, the number of teachers is expected to increase from 992,000 in 1987 to 994,000 in 1989, followed by successive increases to 1.134 million in 1997 (figure 38). The low alternative forecasts decreases from 992,000 in 1987 to 981,000 in 1990. Under the high alternative, from 1987 to 1988 the number of teachers decreases slightly and then increases to 1.200 million in 1997.

Figure 37.—Public classroom teachers, with alternative projections: Fall 1972 to 1997

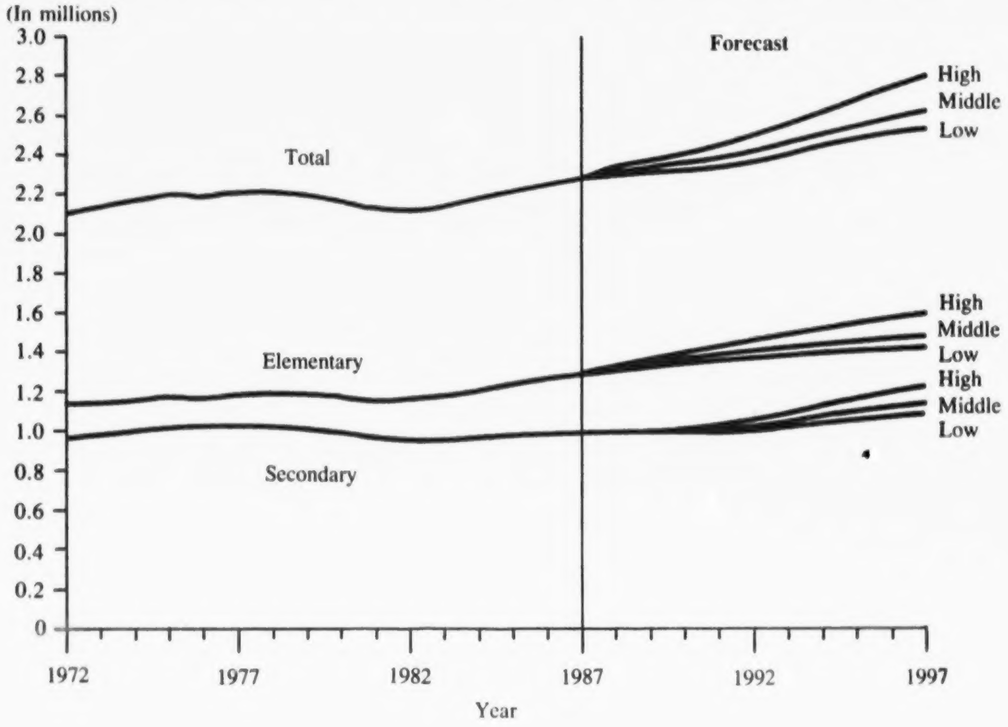


Figure 38.—Public elementary and secondary teachers, with middle alternative projections: Fall 1972 to 1997

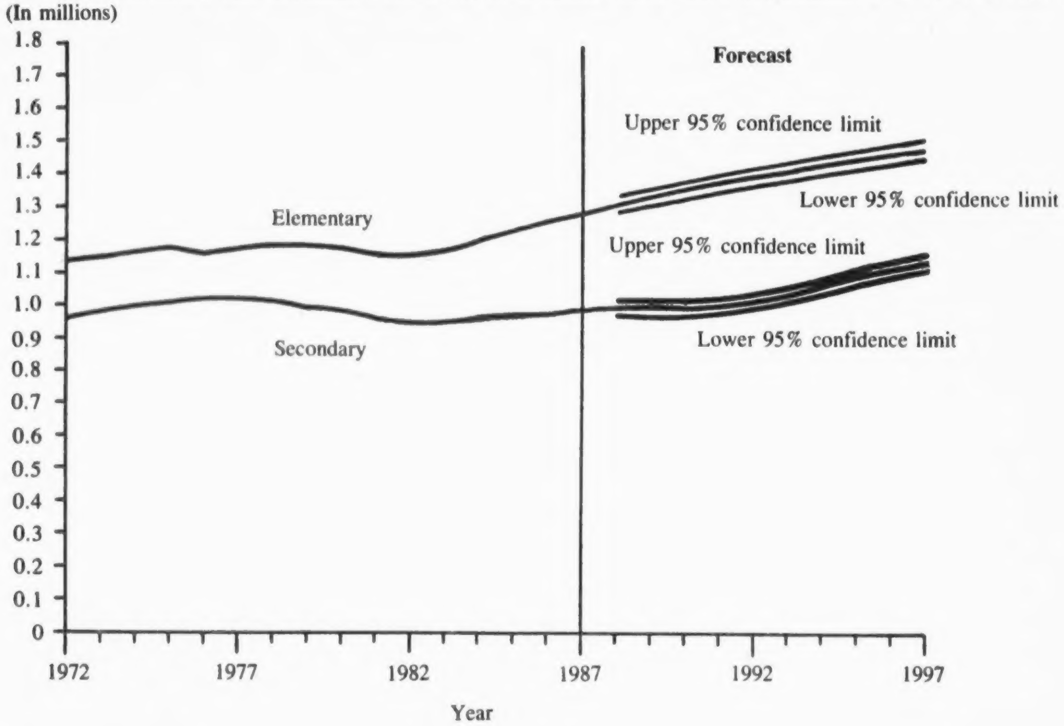
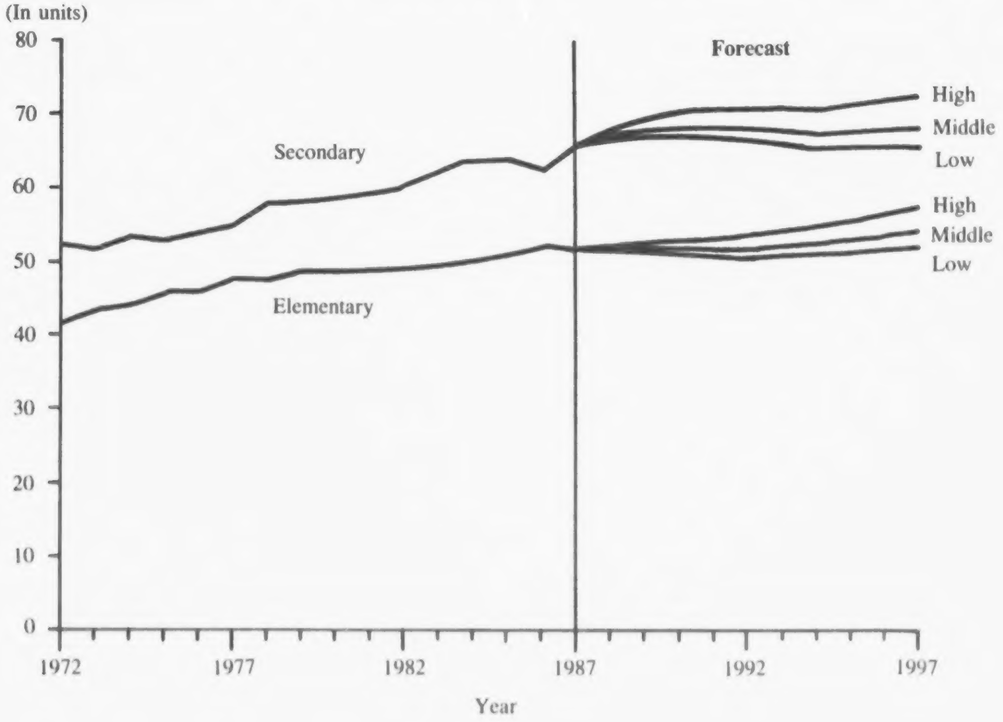


Figure 39.—Public elementary and secondary teachers per 1,000 pupils, with alternative projections: Fall 1972 to 1997



Demand For New-Hiring of Teachers

Interest in the supply and demand for public elementary and secondary teachers increased in the past several years. NCES does not have sufficient data for a detailed teacher supply and demand analysis. A discussion of problems involved in accomplishing this analysis is in *Toward Understanding Teacher Supply and Demand, Priorities for Research and Development, Interim Report*, National Academy Press. According to this report, the number of teachers employed is nearly equal to total teacher demand. Given this assumption and an assumption about future teacher turnover, it is possible to calculate the demand for new-hiring of teachers. This is the number of teachers, not already in the classroom, that schools will need to hire, if these forecasts are correct.

The reader is cautioned in using this data to determine future teacher shortages or surpluses. According to the National Academy of Sciences report, newly hired teachers come from many sources: "experienced teachers on leave last year or recalled from layoffs; experienced teachers out of teaching for longer periods; substitute teachers; in-migrants . . . ; new graduates of teacher training programs; other new graduates who obtain certification; and persons hired on emergency certificates." Any attempt to use just one of these components of supply, such as new teacher graduates, will greatly underestimate supply and consequently overestimate a shortage.

For this study the demand for new-hiring of teachers is partitioned into three parts. The first part is the demand due to turnover, such as retirement or job changes. According to unpublished tables from the Bureau of Labor Statistics, the turnover rate for teachers has been decreasing since 1977–78. For elementary teachers, it fell from 7.6 percent to 4.9 percent in 1983–84. Secondary teacher turnover fell from 7.7 percent to 5.6 percent. For the purposes of calculating the demand for new-hiring of teachers, these most recent rates were used.

The second part is the demand for new-hiring due to enrollment changes, assuming that teacher-pupil ratios remain constant. The third part is the demand for new-hiring due to other factors. In previous editions of *Projections* this third part was called the demand for additional teachers for teacher-pupil ratio changes. However, teacher-pupil ratio changes do not happen independently; they in turn are caused by other factors, such as changing class size policies, changes in approaches to special education, and budget considerations. Since these and possibly other factors are the real cause of these changes in demand, this component has been renamed.

The demand for new-hiring of public elementary and secondary teachers is projected to fall from 155,000 in 1988 to 140,000 in 1989 (table 33). It will rise steadily from 143,000 in 1990 to 174,000 in 1995. No change is predicted from 1995 to 1996, but the demand for new-hiring of teachers is projected to decrease slightly in 1997 to 171,000. The increase in total demand for new-hiring of teachers in the latter part of the forecast period is due mainly to the increases projected for the secondary teachers, since demand for elementary teachers is projected to be relatively stable.

Although the total demand for new-hiring of elementary teachers is not expected to change much, the situation for the three components is different. New-hiring due to elementary turnover rises from 63,000 in 1988 to 72,000 in 1997, an increase of about 14 percent. The amount due to enrollment changes is forecast to fall from a high of 25,000 in 1990 to a negative 3,000 in 1997. Note that the projected enrollment is increasing throughout this period (except for 1997). However, the amount by which the enrollment increases is decreasing (except for 1990). The demand for new-hiring of elementary teachers due to other factors is small for the period 1988 to 1993, no more than 10 percent. The later years show rises from 14 percent in 1994 to 21 percent in 1997.

The demand for new-hiring of secondary teachers is projected to decrease from 60,000 in 1988 to 53,000 in 1989. It will then increase until 1995, reaching a projected high of 86,000, and then decrease slightly in 1996 and 1997. New-hiring due to teacher turnover is projected to be stable at about 56,000 from 1988 to 1992. Then it is projected to rise steadily, reaching 62,000 in 1997. The demand for new-hiring of secondary teachers due to enrollment changes starts at negative 25,000 in 1988, increases to 30,000 in 1994, and then decreases to 16,000 in 1997. The third component, that due to other factors, is relatively small for most of the forecast period. It is 29,000 in 1988 or 49 percent of the total. In 1989 it is 27 percent of the total, but then for the remaining 8 years it is less than 10 percent of the total demand for new-hiring of secondary teachers.

Table 32.—Classroom teachers and teachers per 1,000 pupils in public elementary and secondary schools, with alternative forecasts: 50 States and D.C., fall 1972 to fall 1997

Year	Total		Elementary		Secondary	
	Number in thousands	Teachers per 1,000 pupils	Number in thousands	Teachers per 1,000 pupils	Number in thousands	Teachers per 1,000 pupils
1972	2,103	46.0	1,140	41.7	963	52.3
1973	2,133	47.0	1,149	43.5	984	51.8
1974	2,165	48.1	1,167	44.2	998	53.5
1975	2,196	49.0	1,180	46.0	1,016	53.1
1976	2,186	49.3	1,166	45.9	1,020	54.0
1977	2,209	50.7	1,185	47.5	1,024	55.0
1978	2,206	51.8	1,190	47.6	1,016	57.9
1979	2,183	52.4	1,190	48.5	993	58.1
1980	2,162	52.7	1,177	48.7	985	58.5
1981	2,117	52.8	1,155	48.5	962	59.1
1982	2,110	53.2	1,165	48.8	945	59.9
1983	2,126	54.0	1,178	49.1	948	61.8
1984	2,168	55.2	1,205	49.9	963	63.6
1985	2,207	55.9	1,237	50.9	970	63.7
1986	2,243	56.3	1,267	52.3	977	62.4
1987*	2,276	56.6	1,284	51.3	992	65.5
			Middle alternative forecasts			
1988	2,313	57.4	1,316	51.6	997	67.5
1989	2,333	57.8	1,339	51.8	994	68.5
1990	2,355	57.8	1,360	51.7	995	68.8
1991	2,381	57.7	1,378	51.7	1,003	68.4
1992	2,419	57.8	1,398	52.0	1,020	68.2
1993	2,459	57.9	1,418	52.3	1,041	67.9
1994	2,500	58.1	1,436	52.7	1,064	67.4
1995	2,544	58.6	1,453	53.2	1,091	67.6
1996	2,585	59.1	1,472	53.8	1,114	67.9
1997	2,622	59.6	1,488	54.5	1,134	68.2
			Low alternative forecasts			
1988	2,294	57.0	1,305	51.2	989	67.0
1989	2,307	57.2	1,323	51.2	983	67.7
1990	2,321	56.9	1,339	50.9	981	67.9
1991	2,340	56.7	1,354	50.8	986	67.3
1992	2,370	56.6	1,369	50.9	1,001	66.8
1993	2,403	56.6	1,384	51.1	1,019	66.4
1994	2,435	56.6	1,397	51.3	1,038	65.8
1995	2,471	56.9	1,410	51.6	1,061	65.8
1996	2,504	57.2	1,423	52.0	1,081	65.9
1997	2,531	57.6	1,433	52.5	1,097	65.9
			High alternative forecasts			
1988	2,336	58.0	1,330	52.1	1,006	68.1
1989	2,368	58.7	1,360	52.7	1,008	69.4
1990	2,403	59.0	1,389	52.8	1,014	70.2
1991	2,444	59.2	1,416	53.1	1,028	70.1
1992	2,495	59.6	1,444	53.7	1,051	70.2
1993	2,552	60.1	1,473	54.3	1,079	70.3
1994	2,609	60.7	1,501	55.1	1,108	70.2
1995	2,670	61.5	1,529	56.0	1,141	70.8
1996	2,730	62.4	1,558	56.9	1,172	71.4
1997	2,787	63.4	1,587	58.1	1,200	72.1

*Estimate.

SOURCES: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*. U.S. Department of Education, Center for Education Statistics, Common Core of Data survey. National Education Association, *Estimates of School Statistics*. (This table was prepared December 1987.)

Table 33.—Projected demand for new-hiring of classroom teachers in public elementary and secondary schools, 50 States and D.C., fall 1988 to fall 1997

(Middle alternative forecasts in thousands)

Year	Enrollment	Teachers	Enrollment changes	Teacher changes	Demand for new-hire teachers			
					Total	Due to		
						Turnover	Enrollment changes	Other factors
				Public elementary and secondary				
1988	40,280	2,313	80	37	155	118	(1)	38
1989	40,337	2,333	57	20	140	120	(1)	21
1990	40,752	2,355	415	22	143	121	21	2
1991	41,306	2,381	554	27	149	122	32	(5)
1992	41,879	2,419	573	37	161	124	35	2
1993	42,444	2,459	565	41	166	126	35	5
1994	43,014	2,500	570	41	169	128	37	4
1995	43,442	2,544	428	44	174	130	28	16
1996	43,775	2,585	333	41	174	132	22	20
1997	43,960	2,622	185	37	171	134	13	24
				Public elementary				
1988	25,510	1,316	457	32	95	63	23	9
1989	25,822	1,339	312	23	87	64	16	7
1990	26,295	1,360	473	21	87	66	25	(4)
1991	26,643	1,378	348	19	85	67	18	1
1992	26,906	1,398	263	20	87	68	14	6
1993	27,106	1,418	200	20	88	69	10	9
1994	27,231	1,436	125	18	88	69	7	12
1995	27,316	1,453	85	18	88	70	4	13
1996	27,373	1,472	57	18	89	71	3	15
1997	27,323	1,488	(50)	16	89	72	(3)	19
				Public secondary				
1988	14,770	997	(377)	4	60	56	(25)	29
1989	14,515	994	(255)	(3)	53	56	(17)	14
1990	14,457	995	(58)	1	57	56	(4)	5
1991	14,663	1,003	206	8	64	56	14	(6)
1992	14,973	1,020	310	18	74	56	21	(4)
1993	15,338	1,041	365	21	78	57	25	(4)
1994	15,783	1,064	445	23	81	58	30	(7)
1995	16,126	1,091	343	26	86	60	23	3
1996	16,402	1,114	276	23	84	61	19	4
1997	16,637	1,134	235	20	83	62	16	4

NOTE: Negative numbers in parentheses.

SOURCES: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public School Systems.* U.S. Department of Education, Center for Education Statistics, Common Core of Data survey. National Education Association, *Estimates of School Statistics.* (This table was prepared December 1987.)

Chapter 6

Instructional Faculty

From 1975 to 1987, the number of instructional faculty (excluding graduate assistants) increased faster than total college enrollment. The number of instructional faculty rose 15 percent, from 628,000 to 722,000 (table 34 and figure 40). Over the same period, total college enrollment rose 12 percent. The increase in faculty was due to an increase in the proportion of part-time instructors employed in institutions of higher education. This proportion rose from 30 percent in 1975 to 36 percent in 1987.

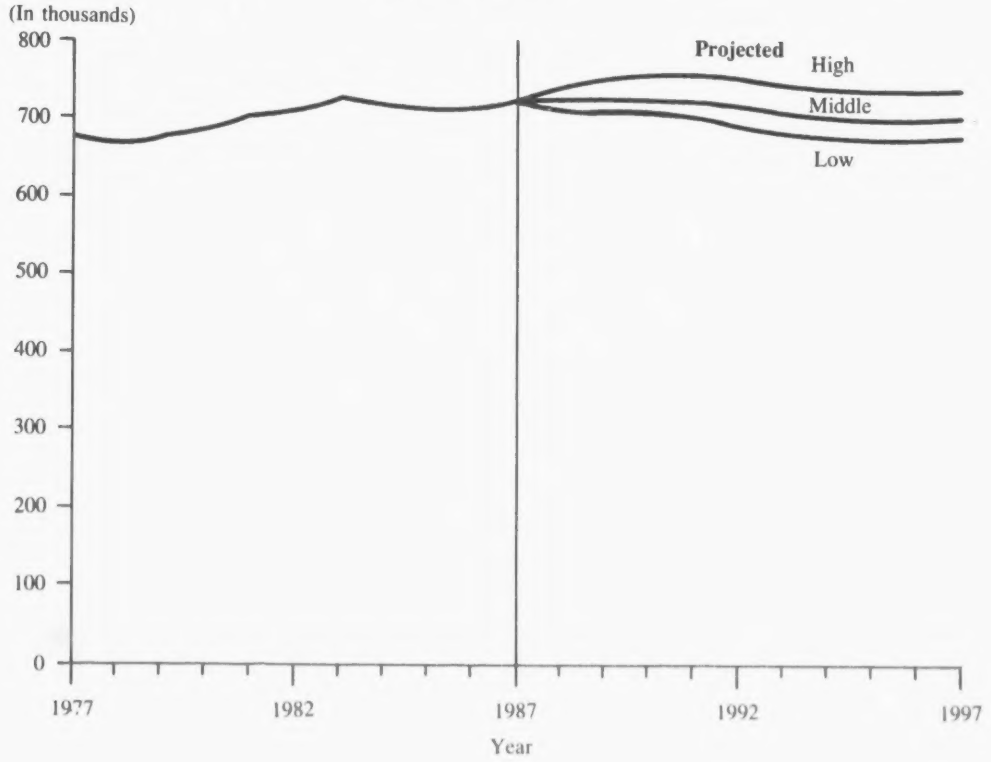
Instructional faculty is projected to increase slightly to 726,000 in 1989 and 1990 before declining to 700,000 in 1997, a decrease of 3 percent from 1987. This also compares with a 3 percent decline in enrollment from 1987 to 1997. These projections assume that faculty-student ratios will remain constant at 1983 levels throughout the projection period. However, if this proportion increases, instructional faculty will tend to exceed the number shown for the middle alternative in table 34.

Much of the faculty growth since 1975 was in 2-year institutions, an increase of 33 percent between 1975 and 1987. The decline projected through 1997 is expected in both public and private institutions. The number is expected to decrease 4 percent in 4-year institutions and less than 1 percent in 2-year institutions. The number of full-time faculty is projected to decrease 5 percent from 459,000 in 1987 to 434,000 in 1997. Part-time faculty is expected to rise from 263,000 in 1987 to 271,000 in 1991 and then fall gradually to 266,000 by 1997, a 1 percent increase over the 1987 level.

Alternative Instructional Faculty Projections

The alternative projections of instructional faculty are based on the low and high alternative projections of enrollment in institutions of higher education in tables 10 through 13. Under the low alternative, instructional faculty will decrease 6 percent from 722,000 to 677,000. Under the high alternative, it will increase to 756,000 in 1990 before declining to 739,000 in 1997, an increase of 2 percent from 1987.

Figure 40.—Instructional faculty in institutions of higher education, with alternative projections: Fall 1972 to 1997



87

Table 34.—Full-time and part-time instructional faculty[1] in institutions of higher education, by employment status, control, and type of institution, with alternative projections: 50 States and D.C., 1975 to 1997

(In thousands)

Year	Total	Employment status		Control		Type	
		Full-time	Part-time	Public	Private	4-year	2-year
1975[2]	628	440	188	443	185	467	161
1976	633	434	199	450	183	467	166
1977	678	448	230	492	186	485	193
1978[2]	668	439	229	482	186	485	183
1979[2]	675	445	230	488	187	494	182
1980[2]	686	450	236	495	191	494	192
1981	705	461	244	509	196	493	212
1982[2]	710	462	248	506	204	493	217
1983	724	471	254	512	212	504	220
1984[2]	717	462	255	505	212	504	213
1985[3]	710	456	254	499	211	500	210
1986[3]	717	460	256	507	210	502	215
1987[3]	722	459	263	508	214	509	214
				Middle alternative projections			
1988	723	458	265	509	214	508	215
1989	726	458	268	511	215	509	217
1990	726	457	269	511	215	509	217
1991	723	452	271	509	214	506	216
1992	715	445	270	503	212	501	214
1993	708	439	269	498	210	496	212
1994	702	434	268	494	208	491	211
1995	698	431	267	492	207	488	211
1996	699	432	267	492	206	487	211
1997	700	434	266	493	207	489	212
				Low alternative projections			
1988	708	446	262	499	210	497	211
1989	710	446	264	500	210	498	213
1990	708	442	266	498	210	496	212
1991	702	434	268	494	208	491	210
1992	692	425	267	486	205	484	208
1993	684	418	266	481	203	478	206
1994	677	412	265	476	201	472	205
1995	674	410	264	475	200	470	205
1996	675	411	264	475	200	470	205
1997	677	414	263	477	200	472	206
				High alternative projections			
1988	743	466	277	523	220	522	222
1989	752	470	282	529	223	526	225
1990	756	470	286	532	224	529	227
1991	755	466	289	531	224	528	227
1992	749	460	289	527	223	524	225
1993	744	455	289	523	221	520	224
1994	739	451	288	520	219	516	223
1995	737	449	288	518	219	513	223
1996	737	450	287	518	218	514	223
1997	739	453	286	520	219	516	223

---

[1] Includes faculty members with the title of professor, associate professor, assistant professor, instructor, lecturer, assisting professor, adjunct professor, or interim professor (or its equivalent). Excluded are graduate students with titles such as graduate or teaching fellow who assist senior staff.

[2] Estimated on the basis of enrollment.

[3] Projected.

NOTE: Because of rounding, details may not add to totals. Some data have been revised from previously published figures.

SOURCE: U.S. Department of Education, Center for Education Statistics, *Employees in Institutions of Higher Education*, various years; and U.S. Equal Employment Opportunity Commission, Higher Education Staff Information Report File, 1977, 1981, and 1983.

Chapter 7

Expenditures of Public Elementary and Secondary Schools

Current expenditures and average annual teacher salaries in public elementary and secondary schools are forecasted to increase annually from school year 1987-88 until school year 1997-98. The forecasts are based on the key assumptions of continued economic growth and increased assistance by State governments to local governments.

Current Expenditures

Past Trends

Current expenditures increased steadily over the past 15 years. They equaled $146.1 billion in school year 1986-87, a 217 percent increase in current dollars over 1972-73 levels (table 35). Most of this increase was due to inflation. Current expenditures in constant dollars increased about 24 percent from 1972-73 to 1986-87 (table 35 and figure 41). At the same time, current expenditures per pupil in average daily attendance (ADA) in constant 1987 dollars rose from $2,799 to $3,966 (table 35 and figure 42). This increase was about 42 percent.

From 1972-73 to 1986-87, disposable income per capita increased substantially and more money was spent on education. There was also a rapid rise in State aid to local governments. As revenue receipts from State sources increased, local governments increased spending on education. A third factor in higher current expenditures per pupil was the decrease in the ratio of the number of pupils to the population: the fewer number of pupils per person, the greater amount of money spent per pupil.

School year	Constant 1987 dollars		Ratio of average daily attendance to the population
	Disposable income per capita	Revenue receipts from State sources per capita	
1972-73	$10,743	$252	0.20
1986-87	12,991	320	0.15

The only time in the past 15 years in which current expenditures fell was from 1978-79 to 1980-81. Two events may have affected current expenditures. First, disposable income per capita and revenue receipts per capita were in periods of either slow growth or decline. Second, this was the period of the "tax revolt" when many voters expressed displeasure at the spending habits of either State or local government by voting for measures that would limit either taxes or spending.

Forecast

In the middle alternative forecast, current expenditures will rise to $201.5 billion in 1997-98, an increase of about 38 percent. Current expenditures per pupil in ADA will increase about 24 percent to $4,934 (table 35 and figure 43). There are two assumptions behind this forecast. First, it is assumed over the next 10 years there will be steady economic growth with disposable income increasing each year. Second, revenue receipts from State sources will increase at the same annual rate as from 1985-86 to 1986-87, approximately 2.9 percent.

Two alternative forecasts are also considered. Each forecast is based on an alternative growth path for revenue receipts from State sources. In the low alternative forecast, revenue receipts increase each year, but at rates lower than in the middle alternative forecast. In the high alternative forecast, revenue receipts increase more rapidly than in the middle alternative forecast. For further details see chapter 14.

In the low alternative forecast, current expenditures will increase about 26 percent to $183.9 billion in 1997-98. Current expenditures per pupil in ADA will increase about 14 percent to $4,505.

In the high alternative forecast, current expenditures will increase approximately 58 percent to $232 billion in 1997-98. Current expenditures per pupil in ADA will increase about 43 percent to $5,671.

Figure 41.—Current expenditures (constant 1987 dollars) in public schools, with alternative projections: 1972-73 to 1997-98

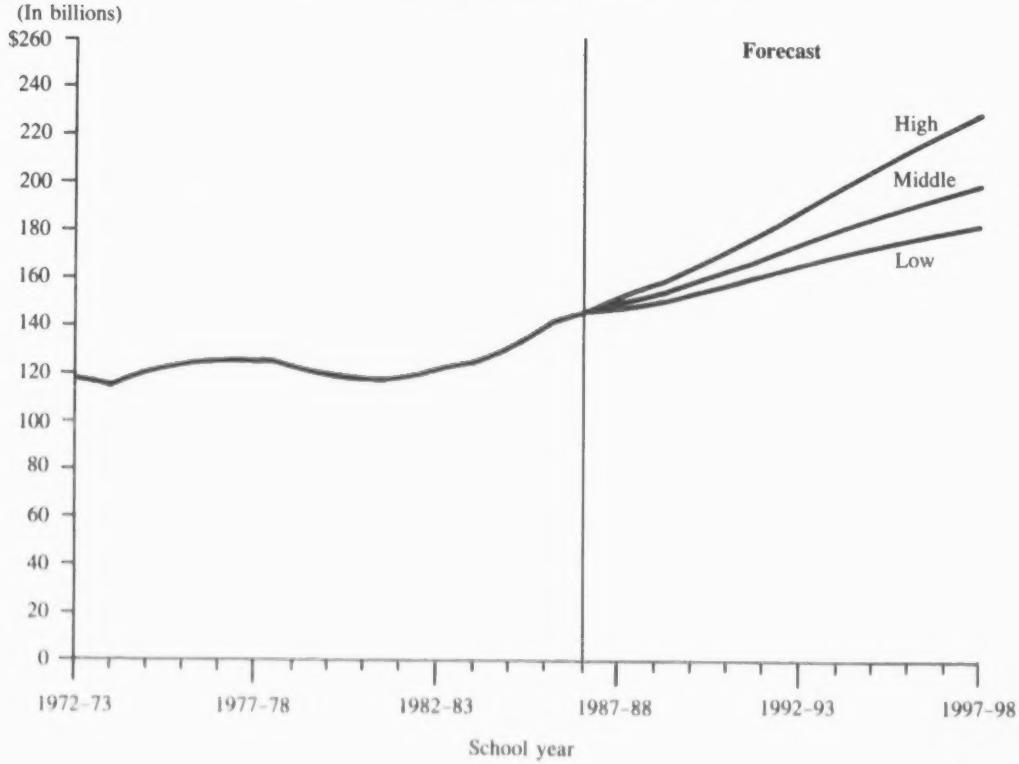


Figure 42.—Current expenditures per pupil in average daily attendance (constant 1987 dollars) in public schools, with alternative projections: 1972-73 to 1997-98

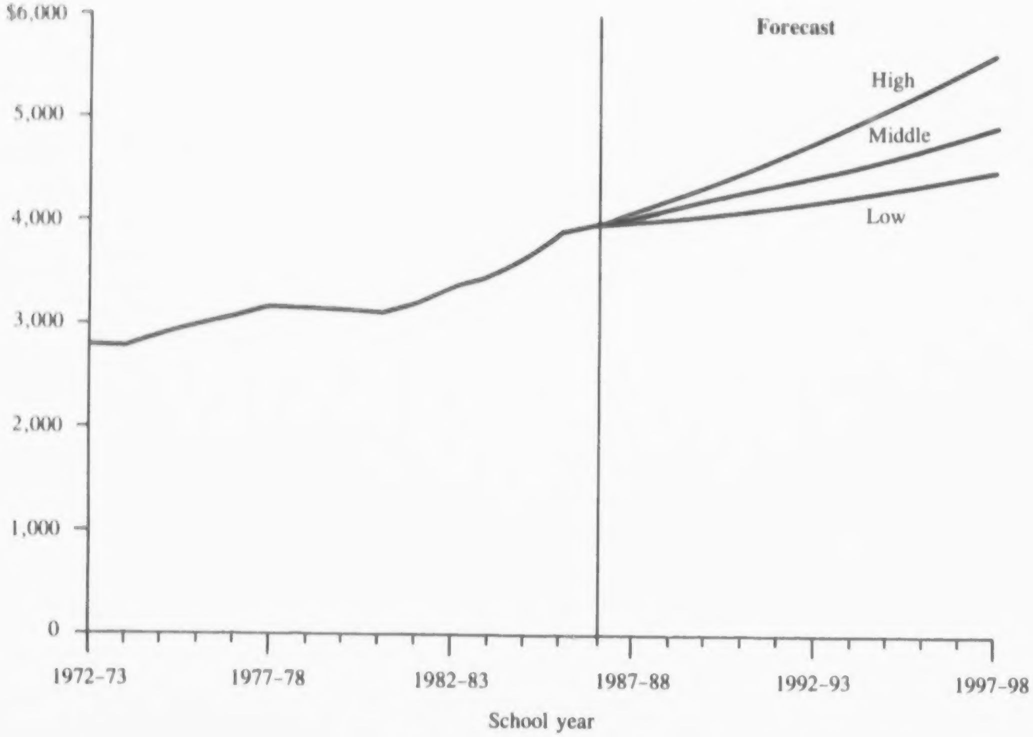
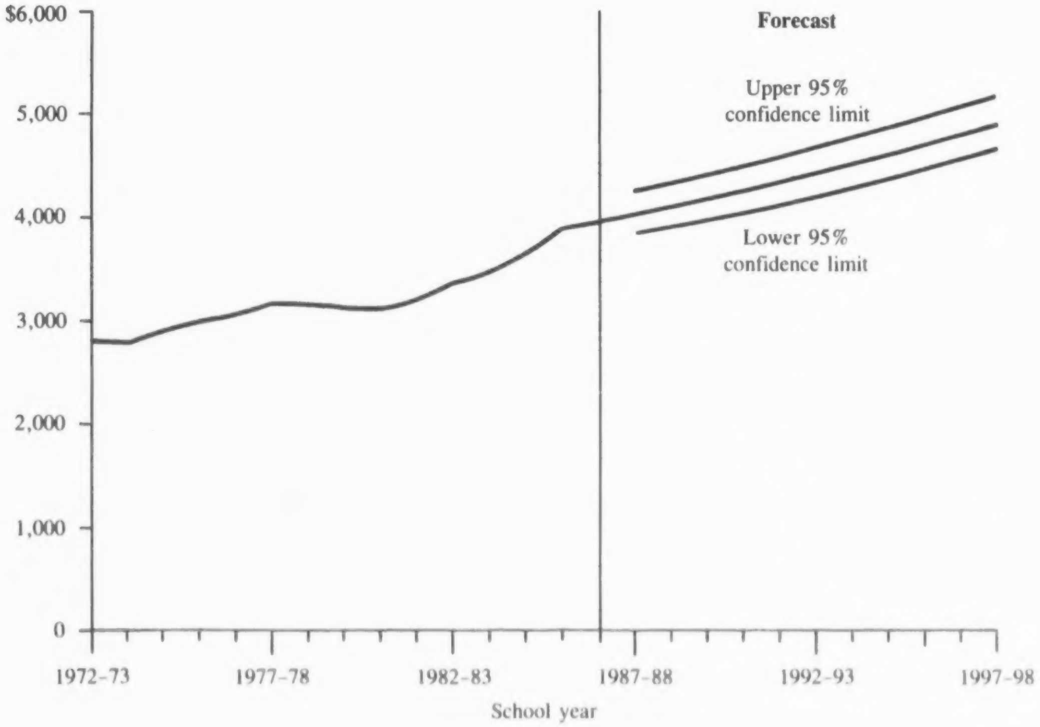


Figure 43.—Current expenditures per pupil in average daily attendance (constant 1987 dollars) in public schools, with middle alternative projections: 1972–73 to 1997–98



Salaries

Recent History

In current dollars, the recent history of average teacher salaries is not very interesting: teacher salaries rose every year since 1972–73, reaching $26,704 in 1986–87 (table 36). This rise looks quite different, however, when teacher salaries are in constant dollars (table 36, figure 44). From 1972–73 to 1979–80, teacher salaries declined in real terms about 15.4 percent, from $26,051 to $22,049 in constant 1987 dollars. Then teacher salaries began steadily increasing. In 1985–86, the average salary surpassed its 1972–73 level.

In the 1970s, the number of people preparing to become teachers was much greater than the number of openings for newly qualified teachers. The fall in teacher salaries during this time was due, in part, to excess supply. Then the number of people preparing to become teachers fell. Eventually, the decline in teacher salaries stopped.

Forecast

In the middle alternative forecast, the average teacher salary will rise about 19.3 percent to $31,856 in 1997–98 (table 36, figure 45). Two assumptions underlie this forecast. First, it is assumed the number of pupils, as measured by ADA, will continue to increase for most of the next decade. Second, it is assumed revenue receipts from State sources will continue to increase at the same rate as they did from 1985–86 to 1986–87. This is the same assumption made for the current expenditures middle alternative forecast.

In the low alternative forecast, teacher salaries will rise steadily, though at a lesser rate than in the middle alternative forecast. The average salary will reach $29,798 in 1997–98, an increase of about 11.6 percent.

In the high alternative forecast, teacher salaries will reach $35,387, an increase of about 32.5 percent.

Figure 44.—Average annual salaries of teachers (constant 1987 dollars) in public schools, with alternative projections: 1972–73 to 1997–98

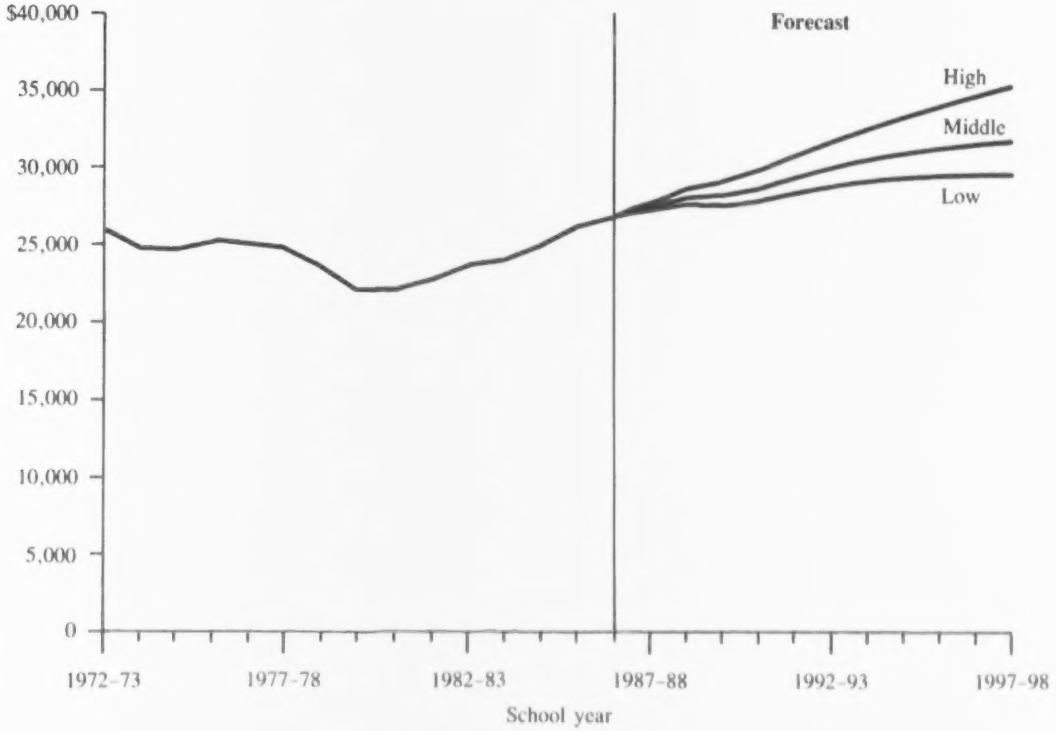


Figure 45.—Average annual salaries of teachers (constant 1987 dollars) in public schools, with middle alternative projections: 1972–73 to 1997–98

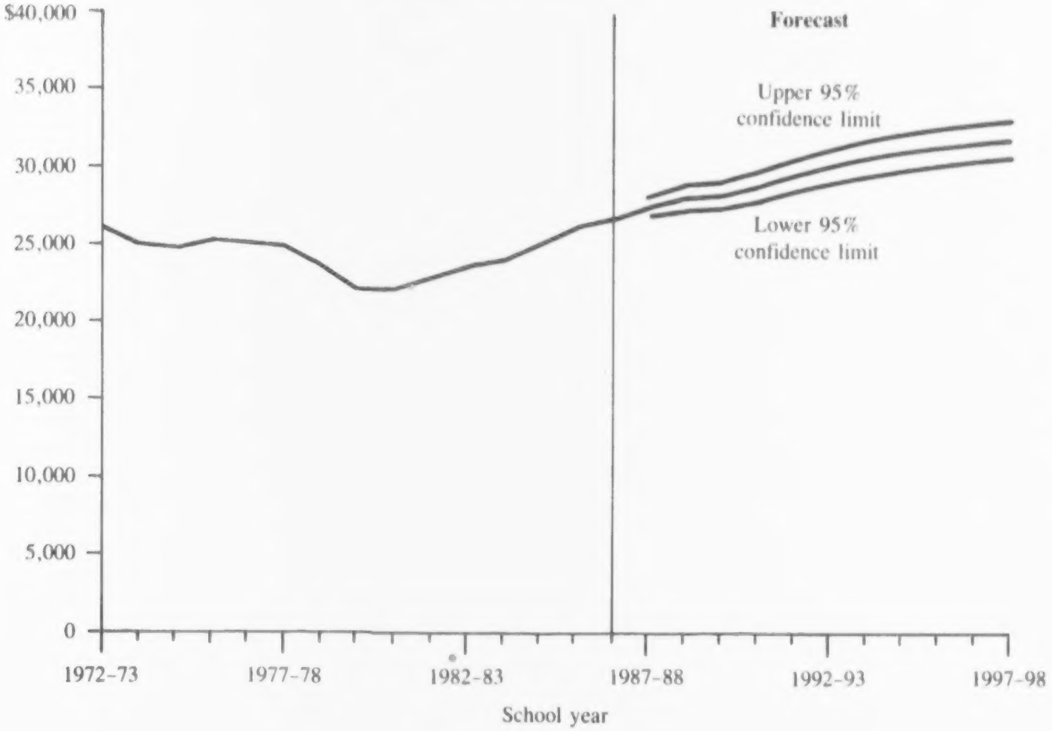


Table 35.—Current expenditures and current expenditures per pupil in average daily attendance in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1972-73 to 1997-98

Year	Average daily attendance (in thousands)	Current dollars		Constant 1987 dollars[1]	
		Total (in billions)	Per pupil in average daily attendance	Total (in billions)	Per pupil in average daily attendance
1972-73	42,179	$ 46.1	$1,093	$118.1	$2,799
1973-74	41,438	50.0	1,207	115.4	2,785
1974-75	41,524	57.3	1,381	121.1	2,916
1975-76	41,270	62.1	1,504	124.0	3,005
1976-77	40,832	66.9	1,638	125.5	3,073
1977-78	40,080	73.1	1,823	127.4	3,179
1978-79	39,076	79.0	2,020	123.7	3,165
1979-80	38,289	87.0	2,272	120.1	3,136
1980-81	37,704	94.3	2,502	118.0	3,129
1981-82	37,095	101.1	2,726	119.1	3,212
1982-83	36,636	108.3	2,955	123.6	3,374
1983-84	36,363	115.4	3,173	126.4	3,475
1984-85	36,499	125.9	3,449	133.1	3,647
1985-86	36,514	137.0	3,752	142.1	3,893
1986-87[2]	36,838	146.1	3,966	146.1	3,966
Middle alternative projections					
1987-88	37,297	—	—	151.3	4,056
1988-89	37,443	—	—	154.4	4,125
1989-90	37,829	—	—	159.2	4,209
1990-91	38,343	—	—	164.6	4,292
1991-92	38,875	—	—	170.0	4,374
1992-93	39,399	—	—	175.5	4,455
1993-94	39,928	—	—	181.2	4,539
1994-95	40,326	—	—	186.6	4,627
1995-96	40,635	—	—	191.9	4,723
1996-97	40,807	—	—	196.8	4,822
1997-98	40,828	—	—	201.5	4,934
Low alternative projections					
1987-88	37,297	—	—	149.6	4,011
1988-89	37,443	—	—	151.2	4,038
1989-90	37,829	—	—	154.6	4,087
1990-91	38,343	—	—	158.5	4,132
1991-92	38,875	—	—	162.5	4,180
1992-93	39,399	—	—	166.5	4,227
1993-94	39,928	—	—	170.6	4,274
1994-95	40,326	—	—	174.4	4,324
1995-96	40,635	—	—	178.1	4,382
1996-97	40,807	—	—	181.1	4,439
1997-98	40,828	—	—	183.9	4,505
High alternative projections					
1987-88	37,297	—	—	153.2	4,108
1988-89	37,443	—	—	158.4	4,230
1989-90	37,829	—	—	165.4	4,371
1990-91	38,343	—	—	173.1	4,514
1991-92	38,875	—	—	181.1	4,659
1992-93	39,399	—	—	189.4	4,807
1993-94	39,928	—	—	198.0	4,959
1994-95	40,326	—	—	206.5	5,120
1995-96	40,635	—	—	215.1	5,293
1996-97	40,807	—	—	223.3	5,472
1997-98	40,828	—	—	231.5	5,671

---

[1] Based on the all urban consumer price index of the Bureau of Labor Statistics, U.S. Department of Labor. Each value is adjusted by the CPI for the year in which the school year ended.

[2] Estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*, and *Revenues and Expenditures for Public Elementary and Secondary Education*: Center for Education Statistics, Common Core of Data survey and unpublished data: and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1986-87. Copyright 1987 by the National Education Association. All rights reserved.) (This table was prepared December 1987.)

Table 36.—Average annual salaries of classroom teachers in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1972-73 to 1997-98

Year	Current dollars	Constant 1987 dollars*
1972-73	$10,176	$26,051
1973-74	10,778	24,864
1974-75	11,690	24,695
1975-76	12,600	25,181
1976-77	13,354	25,056
1977-78	14,198	24,758
1978-79	15,032	23,549
1979-80	15,970	22,049
1980-81	17,644	22,070
1981-82	19,274	22,713
1982-83	20,693	23,628
1983-84	21,917	24,001
1984-85	23,595	24,951
1985-86	25,206	26,154
1986-87	26,704	26,704
	Middle alternative projections	
1987-88	—	27,428
1988-89	—	28,015
1989-90	—	28,183
1990-91	—	28,727
1991-92	—	29,485
1992-93	—	30,056
1993-94	—	30,544
1994-95	—	31,009
1995-96	—	31,343
1996-97	—	31,605
1997-98	—	31,856
	Low alternative projections	
1987-88	—	27,209
1988-89	—	27,598
1989-90	—	27,601
1990-91	—	27,964
1991-92	—	28,558
1992-93	—	28,960
1993-94	—	29,274
1994-95	—	29,557
1995-96	—	29,708
1996-97	—	29,771
1997-98	—	29,798
	High alternative projections	
1987-88	—	27,676
1988-89	—	28,521
1989-90	—	28,963
1990-91	—	29,794
1991-92	—	30,854
1992-93	—	31,740
1993-94	—	32,558
1994-95	—	33,370
1995-96	—	34,072
1996-97	—	34,722
1997-98	—	35,387

*Based on the all urban consumer price index of the Bureau of Labor Statistics, U.S. Department of Labor. Each value is adjusted by the CPI for the year in which the school year ended.

SOURCE: National Education Association, annual *Estimates of School Statistics*. (Latest edition 1986-87. Copyright 1987 by the National Education Association. All rights reserved.) (This table was prepared December 1987.)

Part 2: Projection Methodology

Chapter 8

General Projection Methodology

The general procedure for *Projections* was to express the variable to be projected as a percent of a "base" variable. These percents were then projected and applied to projections of the "base" variable. For example, the number of 18-year-old college students was expressed as a percent of the 18-year-old population for 1967 through 1986. These percents were then projected through 1997 and applied to projections from the Bureau of the Census of the 18-year-old population.

Enrollment projections are based primarily on population projections. Projections of instructional staff, high school graduates, earned degrees conferred, and expenditures are based primarily on enrollment projections.

Exponential smoothing and multiple linear regression are the two major projection techniques used in this publication. Exponential smoothing places more weight on recent observations than on earlier ones. The weights for observations decrease exponentially as one moves further into the past. As a result, the older the data, the less their influence on projections. The rate at which the weights of older observations decrease is determined by the smoothing constant selected.

$$P=aX_t+a(1-a)X_{t-1}+a(1-a)^2X_{t-2}+a(1-a)^3X_{t-3}+\ \dots$$

Where:

P = projected constant
a = smoothing constant ($0<a<1$)
X_t = observation for time t

This equation illustrates that the projection is a weighted average based on exponentially decreasing weights. For a high smoothing constant, weights for earlier observations decrease rapidly. For a low smoothing constant, decreases are more moderate.

In general, the projections in this publication are based on fairly high smoothing constants. The further apart the observations are spaced in time, the more likely are changes in the underlying social, political, and economic structure. Since the observations are on an annual basis, major shifts in the underlying process are more likely in the time span of just a few observations than if the observations were available on a monthly or weekly basis. As a result, the underlying process tends to be unstable from one observation to the next. Another reason for using high smoothing constants is that most of the observations are fairly accurate, since most observations are population values rather than sample estimates. Therefore, large shifts tend to indicate changes in the process rather than noise in the data. For those cases in which the observations were considered to be less accurate, lower smoothing constants were used.

Multiple linear regression was also used in making projections, primarily in the areas of teachers, earned degrees, and expenditures. This technique was used when it was believed that a strong causal relationship existed between the variable being projected (dependent variables) and independent causal variables. However, this technique was used only when accurate data and reliable projections of the independent variables were available.

The functional form primarily used was the multiplicative model. When used with two independent variables, this model takes the form:

$$Y=aX_1^{b_1}X_1^{b_2}$$

This equation can easily be transformed into the linear form by taking the natural log(ln) of both sides of the equation:

$$\ln Y=\ln(a)\ +\ b_1\ln X_1+\ b_2\ln X_2$$

The multiplicative model has a number of advantages; it is a reasonable way to represent human behavior. Constant elasticities are assumed; this says that a 1 percent change in ln X will lead to a given percent change in ln Y. This percent change is equal to b_1. And it lends itself easily to "a priori" analysis because the researcher does not have to worry about units of measurement when specifying relationships. In fact, the multiplicative model is considered the standard in economic problems.

Caveats

Projections are subject to errors from many sources. Alternative projections are shown for most statistical series. These alternatives are not statistical confidence intervals, but instead represent judgements made by the authors as to reasonable upper and lower levels for each projected series. To measure projection reliability, upper and lower statistical confidence limits are presented for alternative projections of public classroom teachers, public high school graduates, earned degrees conferred, and expenditures in public elementary and secondary schools.

Assumptions

All projections are based on underlying assumptions, and these assumptions determine projection results to a large extent. It is important that users of projections understand the assumptions to determine the acceptability of projected time series for their purposes. The tables of assumptions in each chapter describe the primary assumptions upon which the projections of time series are based. For each time series, the respective tables and the assumptions used for each alternative projection are shown.

For most projections, low, middle, and high alternatives are shown. These alternatives reveal the level of uncertainty involved in making projections, and they also point out the sensitivity of projections to the assumptions on which they are based.

Many of the projections in the publication are demographically based. Bureau of Census middle series projections of the various age populations were used. The future fertility rate assumption, which determines projections of the number of births, is the key assumption in making population projections. The middle series population projections assume an ultimate complete cohort fertility rate of 1.8 births per woman by year 2050. This assumption plays a major role in determining population projections for the age groups enrolled in nursery school and kindergarten and elementary grades. The effects of the fertility rate assumption are more pronounced toward the end of the projection period.

For enrollments in secondary grades and college, the fertility assumption is of no consequence, since all students enrolled at these levels were already born when the population projections were made. For projections of enrollments in elementary schools, only middle series population projections were considered. The fertility assumption used in this series tracked closely to the most recent birth data.

Projections of high school graduates are based on projections of the average of the 17- and 18-year-old population. Projections of associate and bachelor's degrees are based on projections of enrollments in institutions of higher education. Projections of instructional faculty are based on projections of faculty-student ratios. Many of the projections of classroom teachers and expenditures in public elementary and secondary schools are based on projections of disposable income per capita. Disposable income per capita projections were from Data Resources, Inc.'s Macroeconomic Model of the U.S. economy. Therefore, the many assumptions made in projecting disposable income per capita also apply to those projections based on projections of disposable income per capita.

Chapter 9

Enrollment—Methodology

Enrollment projections were based on projected enrollment rates, by age and sex, which were applied to population projections by age and sex developed by the Bureau of the Census. These enrollment rates were projected by taking into account the most recent trends as well as the effects of economic conditions and demographic changes on a person's decision to enter college. The enrollment rates were then used in an interactive forecasting model (IFMOD) which consists of age-specific rates by sex and by enrollment levels (nursery school through college). The model has 5 stages (figure 46).

The first stage of IFMOD is an age-specific enrollment model in which enrollment rates are projected and applied to age-specific population projections.[1] This stage, which is used separately for each sex, includes the following categories: (1) nursery and kindergarten, (2) elementary grades 1-8, (3) secondary grades 9-12, (4) full-time college enrollment, and (5) part-time college enrollment. For each of these enrollment categories, enrollment rates were projected by individual ages 3 through 24 and for the age groups 25 to 29, 30 to 34, and 35 years and over.

Enrollments by age and age groups from the Bureau of the Census[2] were adjusted to NCES totals to compute enrollment rates for 1967 through 1986. Different assumptions were made to produce low, middle, and high alternative projections of the past enrollment rates through 1997.

Elementary Grades 1–8

Projections of elementary enrollment rates were considered for ages 5 through 21. Elementary enrollments are negligible for the remaining ages. Since most elementary enrollment rates have been fluctuating at levels close to 100 percent from 1967 to 1986, alternative enrollment rate projections were not computed. The only set of enrollment rate projections computed was based on the assumption that rates will remain constant through 1997 (table 37). Several of the rates in table 37 exceed 100 percent. This is due to several factors. The enrollment data by age were prorated to agree with NCES totals. The Bureau of the Census does not revise enrollment estimates by age, but population estimates are revised regularly.

Secondary Grades 9–12

Projections of secondary enrollment rates were considered for ages 12 through 34. Secondary enrollments are negligible for the remaining ages. Secondary enrollment rates have fluctuated around constant levels through the 1967 to 1986 period. Therefore, alternative enrollment rate projections were not calculated. The only set of projections computed was based on constant enrollment rates (table 38).

For projections of enrollment in grades K–12, the mean absolute percentage errors (MAPE) for lead times of 1, 2, and 5 years have been less than 1 percent—0.2, 0.4, and 0.8 percent, respectively. For projections of enrollment in grades K–8, the MAPEs for lead times of 1, 2, and 5 years were 0.3, 0.6, and 0.9 percent, respectively, while those for projections of enrollment in grades 9–12 were 0.6, 0.8, and 2.0 percent for the same lead times. For lead times of 6 to 10 years, the MAPEs increased moderately for projections of enrollment in grades K–12, K–8, and 9–12, from 1.1 percent to 7.2 percent for grades K–12, 1.2 percent to 8.8 percent for grades K–8, and 2.5 percent to 5.3 percent for grades 9–12.

College Full-Time and Part-Time Enrollment

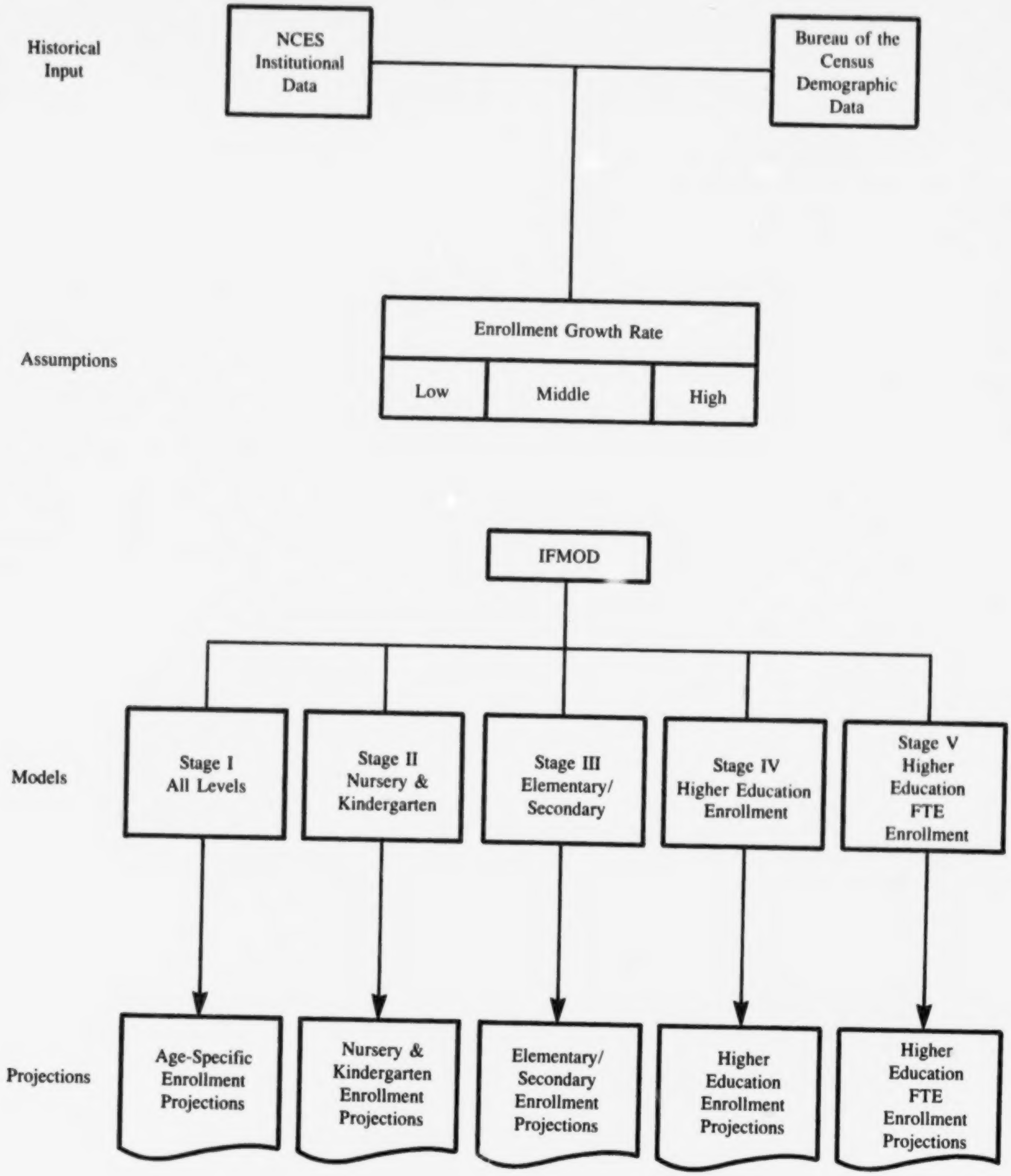
Projections of full-time and part-time college enrollments were considered only for ages 16 and over. (College enrollment is negligible for earlier ages.) Three alternative projections were made using various assumptions. Table 39 shows enrollments rate for 1986 and low, middle, and high alternative projected enrollment rates for 1992 and 1997.

---

[1] U.S. Department of Commerce, Bureau of the Census, unpublished projections.

[2] U.S. Department of Commerce, Bureau of the Census, unpublished tabulations.

Figure 46.—General structure and methodology of the Interactive Forecasting Model (IFMOD)


Historical Input
NCES Institutional Data
Bureau of the Census Demographic Data
Assumptions
Enrollment Growth Rate
Low
Middle
High
IFMOD
Models
Stage I All Levels
Stage II Nursery & Kindergarten
Stage III Elementary/ Secondary
Stage IV Higher Education Enrollment
Stage V Higher Education FTE Enrollment
Projections
Age-Specific Enrollment Projections
Nursery & Kindergarten Enrollment Projections
Elementary/ Secondary Enrollment Projections
Higher Education Enrollment Projections
Higher Education FTE Enrollment Projections

Enrollment in Public Elementary and Secondary Schools, by Grade Group and Organizational Level

The third stage of IFMOD projects public enrollment in elementary and secondary schools by grade group and by organizational level. Public enrollments by age were based on enrollment rate projections for nursery and kindergarten, grade 1, elementary ungraded and special, secondary ungraded and special, and post-graduate enrollment. Grade retention rate projections were used for grades 2 through 12. Table 40 shows the public enrollment rates and table 41 shows the public grade-retention rates for 1986 and projections for 1992 and 1997. The projected rates in tables 40 and 41 were used to compute the projections of enrollments in elementary and secondary schools by grade, shown in table 1.

College Enrollment, by Sex, Attendance Status, and Level Enrolled, and by Type and Control of Institution

The fourth stage of IFMOD projects enrollments in institutions of higher education, by sex, attendance status, and level enrolled by student, and by type and control of institution. For each age group, the percent that enrollment by age, attendance status, level enrolled, and type of institution was of total enrollment was projected. These projections are in tables 42 and 43, along with actual values for 1986. For all projections, it was assumed that there was no enrollment in 2-year institutions at the post-baccalaureate level (graduate and first-professional).

The projected rates in tables 42 and 43 were then adjusted to agree with the projected age-specific enrollment rates in the first stage of IFMOD. The adjusted rates were then applied to the projected enrollments by age group, sex, and attendance status from the first stage of IFMOD to obtain projections by age group, sex, attendance status, level enrolled, and type of institution.

For each enrollment category—sex, attendance status, level enrolled, and type of institution—the percent that public enrollment was of total enrollment was projected. These projections are in table 44 along with actual percents for 1980 and 1986. The projected rates shown were then applied to the projected enrollments in each enrollment category to obtain projections by control of institution.

For each enrollment category by sex and enrollment level and by type and control of institution, the percent that graduate enrollment was of post-baccalaureate enrollment was projected. Actual rates for 1986 and projections for 1992 and 1997 are in table 45. The projected rates in table 45 were then applied to projections of post-baccalaureate enrollment to obtain graduate and first-professional enrollment projections by sex and attendance status and by type and control of institution.

Full-Time-Equivalent Enrollment, by Type and Control of Institution and by Level Enrolled

The fifth stage of IFMOD projects full-time-equivalent enrollment by type and control of institution and by level enrolled. For each enrollment category by level enrolled and by type and control of institution, the percent that the full-time-equivalent of part-time enrollment was of part-time enrollment was projected. Actual percents for 1986 and projections for 1992 and 1997 are in table 46.

These projected percents were applied to projections of enrollments by level enrolled and by type and control of institution from the fourth stage. The projections of the full-time-equivalent of part-time enrollment were added to projections of full-time enrollment (from the previous stage) to obtain projections of full-time-equivalent enrollment.

For projections of enrollment in higher education, the MAPEs for lead times of 1, 2, and 4 years were 0.4, 2.3, and 5.0 percent, respectively. Projections of full-time-equivalent enrollment had MAPEs of 0.7, 1.9, and 4.3 percent for the same lead years.

Basic Methodology

The notation and equations that follow describe the basic models used to project public elementary and secondary enrollment.

Let:

K_t = Enrollment at the nursery and kindergarten level

G_{jt} = Enrollment in grade j

E_t = Enrollment in elementary special and ungraded programs

S_t = Enrollment in secondary special and ungraded programs

PG_t = Enrollment in post-graduate programs

P_i = Population age i

RK_t = Enrollment rate for nursery and kindergarten

$RG1_t$ = Enrollment rate for grade 1

RE_t = Enrollment rate for elementary special and ungraded programs

RS_t = Enrollment rate for secondary special and ungraded programs

RPG_t = Enrollment rate for post-graduate programs

EG_t = Total enrollment in elementary grades (K–8)

SG_t = Total enrollment in secondary grades (9–12)

R_{jt} = Retention rate for grade j: the proportion that enrollment in grade j in year t is of enrollment in grade j - 1 in year t-1.

Then:

$$EG_t = K_t + E_t + \sum_{j=1}^{8} G_{jt}$$

$$SG_t = S_t + PG_t + \sum_{j=9}^{12} G_{jt}$$

Where:

$$K_t = RK_t(P_5)$$

$$G_{jt} = R_{jt}(G_{j-1,\ t-1})$$

$$E_t = RE_t(\sum_{i=5}^{13} P_i)$$

$$G_1t = RG_{1t}(P_6)$$

$$S_t = RS_t(\sum_{i=14}^{17} P_i)$$

$$PG_t = RPG_t(P_{18})$$

For institutions of higher education, projections were computed separately by sex and attendance status of student. The notation and equations are:

Let:

i = Subscript denoting age except:
  i = 25: ages 25–29
  i = 26: ages 30–34
  i = 27: ages 35 and over for enrollment (35–44 for population)

t = Subscript denoting year

E_{it} = Enrollment of students age i

P_{it} = Population age i

R_{it} = Enrollment rate for students age i

T_{it} = Total enrollment for particular subset of students: full-time men, full-time women, part-time men, part-time women

Then:

$$T_{it} = \sum_{i=16}^{27} E_{it}$$

Where:

$$E_{it} = R_{it}(P_{it})$$

Methodological Tables

The tables in this section give the rates used to calculate projections of enrollments, equations used to calculate projections (tables 47 and 48), basic assumptions underlying enrollment projections (table 49), and methods used to estimate values for which data are not available (table 50).

Table 37.—Elementary enrollment rates, by age and sex

Age	Boys		Girls	
	1986	1987-1997	1986	1987-1997
5	5.5	6.7	4.5	6.7
6	85.0	91.3	92.1	91.3
7	102.2	101.2	102.6	101.2
8	102.0	102.9	103.3	102.9
9	103.2	100.9	102.4	100.9
10	101.0	101.8	105.2	101.8
11	104.5	98.8	95.6	98.8
12	101.0	102.4	103.2	102.4
13	94.3	90.6	92.0	90.6
14	32.7	20.9	22.0	20.9
15	6.7	3.7	3.7	3.7
16	0.8	0.5	0.7	0.5
17	0.2	0.1	0	0
18	0.1	0	0	0

Table 38.—Secondary enrollment rates, by age and sex

Age	Boys		Girls	
	1986	1987-1997	1986	1987-1997
12	0.3	0.2	0.1	0.2
13	5.4	8.8	9.3	8.8
14	63.7	77.2	74.9	77.2
15	88.1	90.4	89.2	90.4
16	97.8	94.3	95.4	94.3
17	79.0	79.2	81.5	79.2
18	26.2	15.3	16.9	15.3
19	5.9	2.5	2.2	2.5
20	1.5	1.5	1.6	1.5
21	0.4	0.7	1.0	0.7
22	0.4	0.5	0.2	0.5
23	0.1	0.3	0.2	0.3
24	0.4	0.5	0.5	0.5
25-29	0.2	0.3	0.4	0.3
30-34	0.2	0.3	0.3	0.3

Table 39.—College enrollment rates, by age, sex, and attendance status, with alternative projections

Age	1986	Low alternative		Middle alternative		High alternative	
		1992	1997	1992	1997	1992	1997
Men							
Full-time							
16	0.3	0.4	0.4	0.4	0.4	0.4	0.4
17	3.7	3.8	3.8	3.8	3.8	3.8	3.8
18	31.7	30.6	30.6	34.5	32.4	34.5	32.4
19	31.8	30.1	30.1	34.7	35.2	34.7	35.2
20	25.6	25.2	25.2	27.0	27.4	27.0	27.4
21	20.9	22.0	22.0	22.0	22.0	22.0	22.0
22	15.7	15.0	15.0	16.0	16.0	17.3	17.3
23	10.3	10.7	10.7	10.7	10.7	10.7	10.7
24	8.0	8.5	8.5	8.5	8.5	8.5	8.5
25-29	3.7	3.8	3.8	3.8	3.8	3.8	3.8
30-34	1.6	1.6	1.6	1.6	1.6	1.6	1.6
35-44	0.7	0.7	0.7	0.7	0.7	1.0	1.3
Part-time							
16	—	—	—	—	—	—	—
17	0.3	0.5	0.5	0.5	0.5	0.5	0.5
18	3.4	3.4	3.4	4.2	4.2	4.2	4.2
19	3.4	3.4	3.4	3.6	3.8	4.0	4.0
20	4.5	4.5	4.5	4.5	4.5	4.9	4.9
21	3.7	4.0	4.0	4.0	4.0	4.0	4.0
22	7.7	7.5	7.5	8.0	8.0	8.0	8.0
23	5.1	5.1	5.1	5.1	5.1	5.5	5.5
24	4.0	3.8	3.8	4.0	4.0	4.0	4.0
25-29	5.4	5.4	5.4	5.4	5.4	5.7	5.6
30-34	4.1	4.2	4.2	4.2	4.2	4.6	4.7
35-44	3.3	3.4	3.4	3.4	3.4	4.0	4.0
Women							
Full-time							
16	0.2	0.4	0.4	0.4	0.4	0.4	0.4
17	5.3	5.3	5.3	5.3	5.3	5.3	5.3
18	33.5	33.8	33.8	33.8	33.8	34.0	34.2
19	34.8	33.0	33.0	35.0	35.0	40.0	40.0
20	24.7	24.7	24.7	27.0	27.0	27.0	27.0
21	21.2	21.1	21.1	23.0	23.0	23.0	23.0
22	12.8	12.1	12.1	12.1	12.1	13.5	13.5
23	9.3	8.3	8.3	9.3	9.3	9.7	9.7
24	6.8	6.4	6.4	6.4	6.4	7.0	7.0
25-29	2.6	2.7	2.7	2.7	2.7	2.7	2.7
30-34	1.6	1.6	1.6	1.6	1.6	1.6	1.6
35-44	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Part-time							
16	—	—	—	—	—	—	—
17	0.7	0.7	0.7	0.7	0.7	0.7	0.7
18	4.8	4.7	4.7	5.2	5.2	5.2	5.2
19	5.0	4.6	4.6	5.0	5.0	6.1	6.1
20	6.1	6.0	6.0	6.1	6.1	7.0	7.0
21	5.2	5.1	5.1	5.6	5.6	5.6	5.6
22	8.5	8.5	8.5	8.5	8.5	8.9	9.0
23	6.1	5.8	5.8	6.1	6.1	6.8	6.8
24	4.5	4.5	4.5	4.5	4.5	4.5	4.5
25-29	5.6	5.7	5.7	5.7	5.7	5.7	5.7
30-34	5.0	5.1	5.1	5.1	5.1	5.1	5.1
35-44	6.5	6.4	6.4	6.4	6.4	7.0	7.0

—Less than 0.1 percent.

Table 40.—Enrollment rates in public schools

Grade level	Population base age	1986	Projected	
			1992	1997
Kindergarten	5	92.0	89.7	89.7
Grade 1	6	94.6	94.2	94.2
Elementary ungraded and special	5-13	1.7	1.8	1.8
Secondary ungraded and special	14-17	2.7	2.6	2.6
Postgraduate	18	0.3	0.3	0.3

Table 41.—Public grade retention rates

Grade	1986	Projected	
		1992	1997
2	94.4	94.5	94.5
3	99.9	99.7	99.7
4	100.1	100.1	100.1
5	100.3	100.2	100.2
6	101.2	101.0	101.0
7	104.1	103.9	103.9
8	97.8	98.0	98.0
9	109.3	107.9	107.9
10	93.5	94.2	94.2
11	91.3	91.1	91.1
12	90.6	90.8	90.8

Table 42.—Full-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification

Age	Men			Women		
	1986	1992	1997	1986	1992	1997
				Undergraduate, 4-year institutions		
16-17 years old	67.3	68.0	68.0	55.9	64.0	64.0
18-19 years old	63.2	64.0	64.0	71.6	73.0	73.0
20-21 years old	83.1	85.0	85.0	82.3	83.0	83.0
22-24 years old	64.5	66.0	66.0	61.4	62.0	62.0
25-29 years old	43.4	45.0	45.0	42.4	44.3	44.3
30-34 years old	33.4	33.3	33.3	37.1	39.1	39.1
35 years and over	33.5	33.4	33.4	37.0	37.9	37.9
				Undergraduate, 2-year institutions		
16-17 years old	32.7	32.7	32.7	44.1	43.6	43.6
18-19 years old	36.8	36.7	36.7	28.4	30.0	30.0
20-21 years old	16.9	16.9	16.9	17.7	18.0	18.0
22-24 years old	14.3	15.0	15.0	15.0	15.0	15.0
25-29 years old	16.1	17.0	17.0	32.8	33.7	33.7
30-34 years old	12.7	17.0	17.0	36.7	36.7	36.7
35 years and over	12.6	17.0	17.0	36.5	36.5	36.5
				Postbaccalaureate, 4-year institutions		
16-17 years old	—	—	—	—	—	—
18-19 years old	—	—	—	—	—	—
20-21 years old	—	—	—	—	—	—
22-24 years old	21.2	21.2	21.2	23.6	23.0	23.0
25-29 years old	40.6	40.6	40.6	24.9	25.0	25.0
30-34 years old	53.9	51.0	51.0	26.2	26.2	26.2
35 years and over	53.9	53.8	53.8	26.6	26.5	26.5

—Not applicable.

NOTE: Projections shown for 1992 and 1997 were adjusted to add to 100 percent before computing projections shown in chapter 2.

Table 43.—Part-time enrollment, by level enrolled and type of institution, as a percent of total enrollment for each age and sex classification

Age	Men			Women		
	1986	1992	1997	1986	1992	1997
				Undergraduate, 4-year institutions		
16-17 years old	82.1	82.1	82.1	22.9	22.7	22.7
18-19 years old	9.2	14.0	14.0	15.7	17.0	17.0
20-21 years old	22.8	24.0	24.0	20.6	20.7	20.7
22-24 years old	35.6	37.0	37.0	28.9	28.9	28.9
25-29 years old	21.6	28.0	28.0	23.9	27.1	27.1
30-34 years old	34.8	34.6	34.6	29.7	31.0	31.0
35 years and over	34.8	36.0	36.0	29.7	31.0	31.0
				Undergraduate, 2-year institutions		
16-17 years old	0.0	0.0	0.0	77.1	79.0	79.0
18-19 years old	86.1	85.9	85.9	78.6	80.0	80.0
20-21 years old	71.8	71.8	71.8	73.3	75.0	75.0
22-24 years old	52.0	53.0	53.0	55.8	57.7	57.7
25-29 years old	58.1	60.0	60.0	55.4	57.3	57.3
30-34 years old	40.6	44.0	44.0	51.6	51.6	51.6
35 years and over	40.4	44.0	44.0	51.6	51.6	51.6
				Postbaccalaureate, 4-year institutions		
16-17 years old	17.9	17.7	17.7	0.0	0.0	0.0
18-19 years old	4.7	4.0	4.0	5.7	5.0	5.0
20-21 years old	5.4	5.4	5.4	6.1	5.0	5.0
22-24 years old	12.4	12.5	12.5	15.4	14.0	14.0
25-29 years old	20.3	20.3	20.3	20.7	19.0	19.0
30-34 years old	24.7	24.7	24.7	18.7	16.0	16.0
35 years and over	24.7	24.7	24.7	18.7	15.8	15.8

NOTE: Projections shown for 1992 and 1997 were adjusted to add to 100 percent before computing projections shown in chapter 2.

Table 44.—Public enrollment as a percent of total enrollment, by attendance status, sex, and level enrolled, and by type of institution

Enrollment category	Men			Women		
	1980	1986	1997	1980	1986	1997
Full-time, undergraduate, 4-year institutions	68.8	69.6	69.4	68.6	68.6	68.6
Part-time, undergraduate, 4-year institutions	72.0	73.7	73.2	69.8	69.4	69.3
Full-time, undergraduate, 2-year institutions	92.3	89.9	90.0	89.7	87.3	87.4
Part-time, undergraduate, 2-year institutions	98.7	96.7	96.7	98.5	98.2	98.2
Full-time, postbaccalaureate, 4-year institutions	55.9	56.3	56.0	61.7	60.9	60.6
Part-time, postbaccalaureate, 4-year institutions	60.4	58.5	58.4	71.5	67.9	68.1

Table 45.—Graduate enrollment as a percent of total postbaccalaureate enrollment, by sex and attendance status, and by type and control of institution

Enrollment category	Men			Women		
	1986	1992	1997	1986	1992	1997
Full-time, 4-year, public	72.6	72.4	72.4	78.5	78.7	78.7
Part-time, 4-year, public	98.7	98.7	98.7	99.1	99.2	99.2
Full-time, 4-year, private	53.5	53.3	53.3	62.4	62.5	62.5
Part-time, 4-year, private	90.4	90.7	90.7	95.0	94.9	94.9

Table 46.—Full-time-equivalent of part-time enrollment as a percent of part-time enrollment, by level enrolled, and by type and control of institution

Enrollment category	1986	1992	1997
Public, 4-year, undergraduate	40.4	40.3	40.3
Public, 2-year, undergraduate	33.7	33.7	33.7
Private, 4-year, undergraduate	39.3	39.1	39.1
Private, 2-year, undergraduate	37.1	38.4	38.4
Public, 4-year, graduate	36.2	36.1	36.1
Private, 4-year, graduate	38.1	38.1	38.1
Public, 4-year, first-professional	50.0	53.5	53.5
Private, 4-year, first-professional	50.0	51.9	51.9

Table 47.—Equations for selected college enrollment rates of men, by age and attendance status, (1967 to 1986)

Regression equation	R^2 [1]	Durbin-Watson statistic[2]	Regression technique
RTFT18M = .67 -.00015P18M -.0049UR1619 (-7.45) (-5.58)	.85	2.2	Ordinary least squares
RTFT19M = .54 -.00009P19M -.007UR1619 (-4.05) (-3.75) + .29YD82 (1.52)	.79	1.5	Ordinary least squares
RTFT20M = .42 -.00008P20M -.002UR2024 (-3.31) (-1.82)	.64	2.5	Ordinary least squares
RTPT18M = -.03 + .000011P18M + .00002YD82 (2.08) (7.75)	.81	2.4	Ordinary least squares
RTPT19M = -.04 + .00002P19M + .00001YD82 (4.13) (5.70)	.87	2.7	Ordinary least squares

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson Statistic, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses refer to the value of the t-statistics.

Where: RTFT18M = Enrollment rate of 18-year-old males enrolled full-time
RTFT19M = Enrollment rate of 19-year-old males enrolled full-time
RTFT20M = Enrollment rate of 20-year-old males enrolled full-time
RTPT18M = Enrollment rate of 18-year-old males enrolled part-time
RTPT19M = Enrollment rate of 19-year-old males enrolled part-time
P18M = 18-year-old male population
P19M = 19-year-old male population
P20M = 20-year-old male population
UR1619 = Unemployment rate of 16-to 19-year-olds lagged 2 years
UR2024 = Unemployment rate of 20-to 24-year-olds lagged 3 years
YD82 = Disposable income in billions of 1982 dollars

Table 48.—Equations for selected college enrollment rates of women, by age and attendance status, (1967 to 1986)

Regression equation	R^2 [1]	Durbin-Watson statistic[2]	Regression technique
RTFT20W = .13 + .00005YD82 (5.07)	.59	2.1	Ordinary least squares
RTFT21W = .09 + .00005YD82 (6.67)	.71	1.5	Ordinary least squares
RTPT18W = .002 -.00002YD82 (4.88)	.57	1.9	Ordinary least squares
RTPT21W = -.0007 + .00002YD82 (7.77)	.77	1.9	Ordinary least squares

[1] R^2 = Coefficient of determination

[2] For an explanation of the Durbin-Watson Statistic, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses refer to the value of the t-statistics.

Where: RTFT20W = Enrollment rate of 20-year-old females enrolled full-time
RTFT21W = Enrollment rate of 21-year-old females enrolled full-time
RTPT18W = Enrollment rate of 18-year-old females enrolled part-time
RTPT21W = Enrollment rate of 21-year-old females enrolled part-time
YD82 = Disposable income in billions of 1982 dollars

Table 49.—Enrollment (assumptions)

Variables	Assumptions	Alternatives	Tables
Elementary and secondary enrollment	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates.	middle (no alternatives)	1, 2
	Public enrollment rates and public grade retention rates will remain constant at levels consistent with the most recent rates.	middle (no alternatives)	1, 2
	The percentage of 7th and 8th grade public students enrolled in school organized as secondary schools will remain constant at levels consistent with the most recent rates.	middle (no alternatives)	2
College full-time and part-time enrollment, by age and sex	Age-specific enrollment rates will remain constant at levels consistent with most recent rates.	low	3–5 9–16
	Age-specific enrollment rates for the younger age cohorts will increase over the projection period.	middle	3–5 9–16
	Age-specific enrollment rates will either equal the middle alternative or increased, based on past trends.	high	3–5 9–16
College enrollment, by sex, attendance status, and level enrolled by student, and by type of institution	For each group and for each attendance status separately, enrollment by sex and level enrolled by student, and by type of institution as a percent of total enrollment, will follow past trends through 1997. For each age group and attendance status category, the restriction that the sum of the percentages must equal 100 percent was applied.	high, middle, and low	3–5 9–16
College enrollment, by control of institution	For each enrollment category, by sex, attendance status, and level enrolled by student, and by type of institution, public enrollment as a percent of total enrollment will remain constant at levels consistent with most recent rates.	high, middle, and low	3–5 9–16
Graduate enrollment	For each enrollment category, by sex and attendance status of student, and by type and control of institution, graduate enrollment as a percent of post-baccalaureate enrollment will follow past trends through 1997.	high, middle, and low	17
Full-time equivalent of part-time enrollment	For each enrollment category, by type and control of institution and level enrolled by student, the percent that full-time equivalent of part-time enrollment is of part-time enrollment will remain constant at levels consistent with the most recent rates.	high, middle, and low	23–25

Table 50.—Enrollment (estimation methods)

Variables	Years	Estimation method	Tables
Enrollment in institutions of higher education, by age and attendance status	1977, 1982, and 1987	For each sex, enrollment data from the Bureau of Census by individual ages and by attendance status for 2-year age groups were combined by assuming that within the 2-year age groups, age and attendance status were distributed independently. The resultant enrollment estimates by age and attendance status were then adjusted to NCES enrollment counts by attendance status.	6 7 8

Chapter 10

Public High School Graduates—Methodology

The number of public high school graduates was forecast by using double exponential smoothing to project graduates as a percent of the average of the 17- and 18-year-old population. These forecasts were then multiplied by the average of projections of the 17- and 18-year-old population to produce the high school graduate forecast. This method assumes that past trends in factors affecting graduation will continue for the next 5 years. Some of the factors implicitly included in the model are immigration, dropouts, transfers to and from private schools, and deaths.

Public high school graduate forecasts were produced by first calculating the ratio of graduates to the mean of the 17- and 18-year-old population. This ratio was modeled using double exponential smoothing. Choosing alpha (.54) to minimize the mean square one step ahead forecast error produced the following forecast equation:

$$\text{Ratio} = 65.7 + .4t$$

where:

t is time and $t = 0$ is 1985–86.

This equation was used to forecast the ratio, and then the ratio was multiplied by the mean of 17- and 18-year-old population projections to produce the number of public high school graduates.

The initial values of the smoothed series were calculated using the coefficients obtained by regressing the ratio on time.

The confidence limits were calculated using the procedure described in *Statistical Methods for Forecasting* by Abraham and Ledolter on pages 125–132.

Sources of Data

The number of high school graduates used in these forecasts was from the Common Core of Data (CCD) survey conducted by the National Center for Education Statistics. The 17- and 18-year-old population estimates and projections were from the U.S. Bureau of the Census, *Current Population Reports*, Series P-25. No comparable source of this data exists for private schools, thus forecasts of private high school graduates could not be calculated.

Chapter 11

Earned Degrees Conferred—Methodology

Projections of associate and bachelor's degrees by sex were based on demographic models which relate degree awards to college enrollment by level enrolled and attendance status. Since this type of model produced inadequate results and unrealistic projections for master's, doctor's, and first-professional degrees, double exponential smoothing models were used to project these degrees.

Associate Degrees

Associate degree projections by sex were based on the 18- to 24-year-old population and undergraduate enrollment by attendance status in 2-year institutions. Results of the regression analysis used to project associate degrees by sex are in table 51. Tables of statistical confidence limits are in appendix B.

Bachelor's Degrees

Bachelor's degree projections by sex were based on the 18- to 24-year-old population and undergraduate enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project bachelor's degrees by sex are in table 52. Tables of statistical confidence limits are in appendix B.

Master's, Doctor's, and First-Professional Degrees

The projections of master's, doctor's, and first-professional degrees by sex were developed using double exponential smoothing. The results of the time series analysis are in table 53 for master's degrees, table 54 for doctor's degrees, and table 55 for first-professional degrees. At the national level, regression models using population and enrollment variables did not produce realistic results. Thus double exponential smoothing seemed a likely alternative since numbers of these degrees awarded to men have been falling and those for women have been rising in recent years. With the exception of first-professional degrees, tables of statistical confidence limits are in appendix B.

Methodological Tables

These tables describe equations used to calculate projections (tables 51 through 55), and basic assumptions underlying projections (table 56).

Table 51.—Equations for associate degrees, (1967-68 to 1986-87)

	Regression equation	R^2[1]	Durbin-Watson statistic[2]	Regression technique
Men	ASSOCM = -56,580.4 + 287.3UGFTM2 (10.28)	.85	1.1	Ordinary least squares
Women	ASSOCW = -23,854.0 + 299.0UGFTW2 (34.39)	.99	1.2	Ordinary least squares

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson Statistic, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses refer to the value of the t-statistics.

Where: ASSOCM = Number of associate degrees awarded to men
ASSOCW = Number of associate degrees awarded to women
UGFTM2 = Full-time male undergraduate enrollment in 2-year institutions lagged one year
UGFTW2 = Full-time female undergraduate enrollment in 2-year institutions lagged one year

Table 52.—Equations for bachelor's degrees, (1969-70 to 1986-87)

	Regression equation	R^2[1]	Durbin-Watson statistic[2]	Regression technique
Men	BACHM = 191,361.9 - 7.5P1824M (-1.96) +246.3UGFT4M - 284.3UGPT4W (6.06) (-3.01)	.73	0.9	Ordinary least squares
Women	BACHW = +119,750.7 -9.8P1824W (-4.58) + 270.8UGFT4W (12.30) - 127.6UGPT4W (-3.47)	.99	1.5	Ordinary least squares

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson Statistic, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses refer to the value of the t-statistics.

Where: BACHM = Number of bachelor's degrees awarded to men
BACHW = Number of bachelor's degrees awarded to women
P1824M = Population of 18- to 24-year-old males
P1824W = Population of 18- to 24-year-old females
UGFT4M = Full-time undergraduate enrollment of males in 4-year institutions lagged 3 years
UGPT4M = Part-time undergraduate enrollment of males in 4-year institutions lagged 3 years
UGFT4W = Full-time undergraduate enrollment of females in 4-year institutions lagged 3 years
UGPT4W = Part-time undergraduate enrollment of females in 4-year institutions lagged 3 years

Table 53.—Equations for master's degrees, (1969-70 to 1986-87)

Exponential smoothing equations

	Equation (t = 0 in 1986-87)	MAD*	Smoothing constant
Men	MASTM = 143,503 + 32t	27,525	0.90
Women	MASTW = 71,593 - 12,436t	20,594	0.30

*MAD = Mean absolute deviation.

Table 54.—Equations for doctor's degrees, (1969-70 to 1985-86)

Exponential smoothing equations

	Equation (t = 0 in 1986-87)	MAD*	Smoothing constant
Men	DOCM = 21,767 - 103t	2,636	0.60
Women	DOCW = 4,225 - 1,530t	1,931	0.40

*MAD = Mean absolute deviation.

Table 55.—Equations for first-professional degrees, (1969-70 to 1985-86)

Exponential smoothing equations

	Equation (t = 0 in 1986-87)	MAD*	Smoothing constant
Men	FPROM = 49,284 - 1,009t	9,990	0.80
Women	FPROW = 24,263 + 1,150t	3,103	0.15

*MAD = Mean absolute deviation.

Table 56.—Earned degrees conferred (assumptions)

Variables	Assumptions	Alternatives	Tables
Associate degrees (men)	The number of associate degrees awarded to men is a linear function of full-time undergraduate enrollment in 2-year institutions.	middle	27
Associate degrees (women)	The number of associate degrees awarded to women is a linear function of full-time undergraduate enrollment in 2-year institutions.	middle	27
Bachelor's degrees (men)	The number of bachelor's degrees awarded to men is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions and the 18- to 24-year-old population.	middle	28
Bachelor's degrees (women)	The number of bachelor's degrees awarded to women is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions and the 18- to 24-year-old population.	middle	28
Master's degrees (men)	The number of master's degrees will decrease based on past trends.	middle	29
Master's degrees (women)	The number of master's degrees will increase based on past trends.	middle	29
Doctor's degrees (men)	The number of doctor's degrees will decrease based on past trends.	middle	30
Doctor's degrees (women)	The number of doctor's degrees will increase based on past trends.	middle	30
First-professional degrees (men)	The number of first-professional degrees will decrease based on past trends.	middle	31
First-professional degrees (women)	The number of first-professional degrees will increase based on past trends.	middle	31

Chapter 12

Public Classroom Teachers—Methodology

In *Targeted Forecast: Public Classroom Teachers, March 1988*, the National Center for Education Statistics (NCES) for the first time used econometric models to forecast the number of public elementary and secondary classroom teachers. That model was also used to produce the forecasts for this publication. In that model the number of public school teachers was forecast separately for the elementary and secondary levels. The elementary teachers were modeled as a function of per capita income (lagged 2 years), revenue receipts from State sources per capita, and elementary enrollment. Secondary teachers were modeled as a function of per capita income (lagged 1 year), revenue receipts from State sources per capita, and secondary enrollment (lagged 1 year). Both per capita income and revenue receipts from State sources were in constant 1982 dollars.

This model is based on suggestions in the National Academy of Sciences report: *Toward Understanding Teacher Supply and Demand, Priorities for Research and Development, Interim Report*, National Academy Press. The equations in this section should be viewed as forecasting rather than structural equations as the limitations of time and available data precluded the building of a large-scale, structural teacher model. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2's), the t-statistics of the coefficients, the Durbin-Watson statistic, and residual plots.

The multiple regression technique used yields good results only if the relationships that existed among the variables in the past continue throughout the forecast period.

The elementary classroom teacher model is:

$$\mathrm{ELTCH} = b_0 + b_1\mathrm{PCI2} + b_2\mathrm{SGRANT} + b_3\mathrm{ELENR}$$

where:

ELTCH is the number of public elementary classroom teachers;

PCI2 is disposable income per capita in 1982 dollars, lagged 2 years;

SGRANT is revenue receipts from State governments per capita in 1982 dollars; and

ELENR is the number of students enrolled in public elementary schools.

Table 57 summarizes the results for the elementary public teacher model. Each variable affects the number of teachers in the expected way. As people receive more income, the State spends more money on education, and as enrollment increases, the number of teachers hired increases.

The secondary classroom teacher model is:

$$\mathrm{SCTCH} = b_0 + b_1\mathrm{PCI1} + b_2\mathrm{SGRANT1} + b_3\mathrm{SCENR}$$

where:

SCTCH is the number of public secondary classroom teachers;

PCI1 is disposable income per capita in 1982 dollars, lagged 1 year;

SGRANT1 is revenue receipts from State governments per capita in 1982 dollars, lagged 1 year; and

SCENR is the number of students enrolled in public secondary schools.

Table 58 summarizes the results for the secondary public teacher model. Each variable affects the number of teachers in the expected way. As people receive more income, the State spends more money on education, and as enrollment increases, the number of teachers hired increases.

Enrollment is by organizational level, not by grade level. Thus secondary enrollment is not equal to grades 9–12 enrollment. This is because some States count some grades 7 and 8 enrollment as secondary. The distribution of the number of teachers is by organizational level, not by grade span.

Percent changes were calculated using unrounded numbers.

Projections of the demand for new-hiring of classroom teachers were calculated separately for the elementary and secondary levels. These two were then added together to obtain the total demand for new-hiring of elementary and secondary public classroom teachers. For each level the demand for new-hiring of teachers is decomposed into three parts: that due to turnover; that due to enrollment changes; and that due to other factors. The following equations provide the details of the calculations:

$$NH_t = NT_t + NE_t + NO_t$$

$$NT_t = TC_{t-1} * TN$$

$$NE_t = (EN_t - EN_{t-1})\ (TP_{t-1})/1{,}000$$

$$NO_t = (TC_t - TC_{t-1}) - NE_t$$

where:

t = Subscript denoting time

EN_t = Enrollment

TC_t = Number of classroom teachers

NH_t = Total demand for new-hiring of teachers

NT_t = Number of new hires needed for turnover

NE_t = Number of new hires needed for enrollment changes

NO_t = Number of new hires needed for other reasons

TP_t = Number of teachers per 1,000 pupils

TN = Turnover rate

Turnover rates were obtained from unpublished tables of the Bureau of Labor Statistics. For the purposes of calculating the demand for additional teachers, the most recent rates, those for 1983–84, were assumed to hold for the forecast period. The turnover rate was 4.9 percent for public elementary teachers and 5.6 percent for public secondary teachers.

Sources of Data

The total number of public school teachers, enrollment by organizational level, and revenue receipts from State sources used in these forecasts were from the Common Core of Data (CCD) survey conducted by NCES. The proportion of teachers by organizational level was from the National Education Association and then applied to the total number of teachers from CCD to produce the number of teachers by organizational level. No comparable time series of this type exists for private schools, thus forecasts of private school teachers could not be calculated.

Disposable income and population were obtained from the Data Resources, Inc., report "Offline U.S. Economic Service: Long-term Option."

Table 57.—Public elementary classroom teachers model, key statistics

Number of observations	R^2 (adjusted)	Durbin-Watson statistic
31	.99528275	1.732238532

Independent variables	Coefficient	Standard error	T-statistic
Constant	-4.214440	79.62145	-.05293097
PCI2	0.04413545	0.008851454	4.986237
SGRANT	1.32214	0.2478523	5.334388
ELENR	0.01827863	0.00285684	7.997006

Table 58.—Public secondary classroom teachers model, key statistics

Number of observations	R^2 (adjusted)	Durbin-Watson statistic
31	.99858247	1.77064870

Independent variables	Coefficient	Standard error	T-statistic
Constant	-101.0222	24.28170	-4.160426
PCI1	0.03172694	0.005515314	5.752516
SGRANT	0.8866507	0.1923681	4.609136
SCENR	0.03282424	0.00148377	28.58316

Chapter 13

Instructional Faculty—Methodology

Projections of full-time instructional faculty in institutions of higher education are based on alternative projections of full-time enrollment, by type and control of institution (tables 10–13) and constant projections of faculty-student ratios by type and control of institution.

Projections of part-time instructional faculty are based on alternative projections of part-time enrollment, by type and control of institution (tables 10–13) and constant projections of faculty-student ratios.

Instructional Faculty

Let:

FE_t = Full-time enrollment in institutions of higher education

PE_t = Part-time enrollment in institutions of higher education

FC_t = Full-time instructional faculty

PC_t = Part-time instructional faculty

FEC_t = Ratio of full-time instructional faculty to full-time enrollment (faculty-student ratio)

PEC_t = Ratio of part-time instructional faculty to part-time enrollment (faculty-student ratio)

Then:

$FC_t = FE_t * FEC_t$

$PC_t = PE_t * PEC_t$

Methodological Tables

These tables describe rates used to calculate projections (tables 59), basic assumptions underlying projections (table 60), and methods used to estimate values for which data are not available (table 61).

Table 59.—Faculty-student ratios* used to project full-time and part-time faculty

Type and control of institution	Full-time	Part-time
Public 4-year	65.0	42.0
Public 2-year	52.0	43.0
Private 4-year	77.0	83.0
Private 2-year	36.0	83.0

*Faculty per 1,000 students

Table 60.—Instructional faculty (assumptions)

Variables	Assumptions	Alternatives
Full-time instructional faculty	For each type and control institution, the percent that full-time instructional faculty is of full-time enrollment will remain constant at 1983 levels.	High, middle, and low
Part-time instructional faculty	For each type and control of institution, the percent that part-time instructional faculty is of part-time enrollment will remain constant at 1983 levels.	High, middle, and low

Table 61.—Instructional faculty (estimation methods)

Variables	Years	Estimation method	Tables
Full-time instructional faculty	1985, 1978, 1979, 1980, 1982, and 1984	For each type and control of institution, the percent that full-time instructional faculty was of full-time enrollment was interpolated. This percent was applied to full-time enrollment for each year.	34
Part-time instructional faculty	1985, 1978, 1979, 1980, 1982, and 1984	For each type and control of institution, the percent that part-time instructional faculty was of part-time enrollment was interpolated. This percent was applied to part-time enrollment for each year.	34

Chapter 14

Expenditures of Public Elementary and Secondary Schools—Methodology

Econometric techniques were used to produce the forecasts for current expenditures and average teacher salaries. The equations in this chapter should be viewed as forecasting, rather than structural, equations as the limitations of time and available data precluded the building of large-scale structural models. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2's), the t-statistics of the variables, the Durbin-Watson statistic, and residual plots.

The multiple regression technique used yields good results only if the relationships that existed among the variables in the past continue throughout the forecast period.

The Elementary and Secondary School Current Expenditure Model

Economists and other researchers have progressed in developing a model of the demand for elementary and secondary school current expenditures.[1] In most instances, researchers have used cross-sectional data. The Elementary and Secondary School Current Expenditure Model builds on the knowledge gained from these cross-sectional studies and adapts them for use in a time series study.

The Elementary and Secondary School Current Expenditure Model is:

$$\ln(CUREXP) = b_0 + b_1\ln(PCI) + b_2\ln(SGRANT) + b_3\ln(ADAPOP1)$$

where:

ln indicates the natural log;

CUREXP equals current expenditures of public elementary and secondary schools per pupil in average daily attendance (ADA) in constant 1982 dollars;

PCI equals disposable income per capita in constant 1982 dollars;

SGRANT equals revenue receipts from State governments per capita in constant 1982 dollars; and

ADAPOP1 equals the ratio of average daily attendance to the population all lagged 1 period.

The model was estimated using the ordinary least squares option of the econometrics package RATS. All variables were placed in log form as the test statistics were superior for that form and there is some evidence from the cross-sectional studies that the log form is superior. The forecasts for current expenditures per pupil were calculated in 1982 dollars. The all urban consumer price index was used to place these forecasts in 1987 dollars.

The results for the model are on table 62. Each variable affects current expenditures in the direction that would be expected. As people receive more income, either directly (PCI), or from the State government (SGRANT), the level of spending increases. As the number of pupils increases relative to the population (that is, as ADAPOP1 increases), the level of spending per pupil falls.

From the cross-sectional studies of the demand for education expenditures, we have a rough idea how sensitive current expenditures are to changes in PCI and ADAPOP1. We can compare the results from this model to those from the cross-sectional studies. For this model, an increase in disposable income per capita of 1 percent, with SGRANT and ADAPOP1 held constant, would result in an increase of current expenditures per pupil in ADA of approximately .47 percent. Holding PCI and SGRANT constant, an increase in the ratio of average daily attendance to the population (lagged 1 year) of 1 percent would result in a decrease in current expenditures per pupil in ADA of approximately .43 percent. Both numbers are well within the range of what has been found in other studies.

---

[1] For a review and discussion of this discussion of this literature, see Inman, R. P. (1979), "The fiscal performance of local governments: an interpretive review," in *Current Issues in Urban Economics*, edited by P. Mieszkowski and M. Straszheim, John Hopkins Press, Baltimore, Maryland.

The confidence intervals for current expenditures per pupil were produced using equation (4.48) of D. Montgomery, and Peck, *Introduction to Linear Regression Analysis*, New York: John Wiley and Sons, 1982, page 141. The 95 percent confidence interval can be viewed as showing for each year the interval in which it is 95 percent sure that current expenditures will fall within if the assumptions behind the forecast occur.

Forecasts for total current expenditures were made by multiplying the forecasts for current expenditures per pupil in ADA by forecasts for the ADA.

The Elementary and Secondary Teacher Salary Model

As with current expenditures, most studies conducted on teacher salaries have used cross-sectional data. Unlike current expenditures however, the models from these existing cross-sectional studies cannot be easily reformulated for use with time series data. One reason is that we have no data on the supply of teachers. Hence the elementary and secondary salary model contains terms which measure the demand for teachers in the economy.[2]

The Elementary and Secondary Teacher Salary Model is:

$$\text{SALARY} = b_0 + b_1\text{CUREXP} + b_2\text{ADAPOP} + b_3\text{DIFADA1} + b_4\text{DIFADA2}$$

where:

SALARY equals the average annual salary of teachers in public elementary and secondary schools in constant 1982 dollars;

CUREXP equals current expenditures of public elementary and secondary schools per pupil in average daily attendance in constant 1982 dollars;

ADAPOP equals the ratio of average daily attendance to the population;

DIFADA1 equals the change in average daily attendance lagged 1 period; and

DIFADA2 equals the change in average daily attendance lagged 2 periods.

To estimate the Elementary and Secondary Teacher Salary model, a method for correcting for autocorrelation was used.[3] This was done as the test statistics were significantly better than those from the OLS estimations and the Durbin-Watson statistic was in the inconclusive region when the model was estimated using OLS.

The results for this model are also on table 62.

There is no literature for comparing the sizes of the coefficients. However, the direction of the impact each variable has on salaries is as expected: as the desired level of spending per pupil increases (higher CUREXP), more teachers are required so demand for teachers increases and salaries increase; as the number of students increases (higher ADAPOP, DIFADA1 and DIFADA2), demand for teachers increases so salaries increase.

As this model was calculated using a different technique than the current expenditures model, a different method for calculating confidence intervals was required. In this case, the confidence limits were calculated using equation (8.3.14) of G. Judge, Griffiths, Hill, Lutkepohl, and Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, page 318.

Current expenditures, average teacher salaries, and the number of teachers are interrelated. Hence, two exercises were conducted to see if the forecasts of these three time series are consistent.

First, for every school year from 1972-73 until 1997-98 (using the middle alternative forecast), the number of teachers was multiplied by the average salary. This was divided by current expenditures. The resulting ratio shows the portion of current expenditures that go towards teacher salaries. The values for the forecast period were all within the range of the values for the historical period.

Second, for each year in the forecast period, current expenditures were multiplied by the 1986-87 ratio of spending on salaries to all current expenditures. This series represents how much would be spent on teacher salaries if the relationship that existed in 1986-87 were still to hold. Each number in this series was divided by its counterpart in the teacher time series to find a time series for average teacher salaries. This imputed time series was compared to the forecast series for teacher salaries. For every year, this imputed series was well within the 95 percent confidence interval.

The results of these exercises indicate that the forecasts of these three time series are consistent.

Sources of Past and Forecast Data

Numbers from different sources were used to produce these forecasts. In some instances, the time series used was made by either combining numbers from various sources or manipulating the available numbers. The sources and the methods of manipulation are described here.

---

[2] Terms that may measure the supply of teachers, such as the adult unemployment rate, were tried but were not included in the final model.

[3] The maximum likelihood search procedure of the statistical package RATS was used.

The time series used for current expenditures was compiled from several different sources. For the school years ending in even numbers from 1959-60 to 1975-76, the numbers for current expenditures were from various issues of the *Statistics of State School Systems* published by the National Center for Education Statistics (NCES). The numbers for the school years ending in odd numbers during the 1960s were from various issues of the National Education Association (NEA), *Estimates of School Statistics*. For the school years ending in odd numbers during the 1970s up to and including 1976-77, the numbers were from various issues of the *Revenues and Expenditures for Public Elementary and Secondary Education* published by NCES. From 1977-78 until 1985-86, the numbers were from the NCES Common Core of Data survey and unpublished data. For 1986-87, the number in table 35 is from the NCES early estimate system. As this number was not available, the number from NEA's *Estimates of School Statistics* was used in calculating the model. These two numbers are almost identical, with the NEA number for current expenditures being $146.2 billion dollars.

For 1972-73, 1974-75, and 1976-77, expenditures for summer schools were subtracted from the published figure for current expenditures. For 1972-73, there were no published numbers for summer school expenditures so the average of the values for 1971-72 and 1973-74 from the *Statistics of State School Systems* was used.

Note that while the data from the different sources are similar, they are not entirely consistent. Also, the NCES numbers beginning with 1980-81 are not entirely consistent with the earlier NCES numbers.

The forecast values for current expenditures used in producing the forecasts for teacher salaries were those produced by the current expenditures model. The values from each of the current expenditure forecasts were used in its teacher salary counterpart.

With two exceptions, the sources for the past values of average daily attendance (ADA) were identical to the sources for current expenditures. For 1978-79, the number was from the *Revenues and Expenditures for Public Elementary and Secondary Education*. For 1986-87, the same number that was in table 35 was used in the calculations. This number was from the NEA's *Estimates of School Statistics*.

Forecasts for ADA were made by multiplying the forecasts for enrollment in this book by the average value of the ratios of the ADA to the enrollment from 1979-80 to 1986-87, approximately .93.

For 1959-60 to 1984-85, the sources for revenue receipts from State sources were the two NCES publications, *Statistics of State School Systems* and *Revenues and Expenditures for Public Elementary and Secondary Education*, and the NCES Common Core of Data survey. The values for 1985-86 and 1986-87 were determined by taking the values for revenue receipts for 1984-85, 1985-86, and 1986-87 from the NEA *Estimates of School Statistics*, calculating the growth rates for total revenue receipts in constant 1982 dollars, and applying those growth rates on NCES's 1984-85 number.

For the middle alternative forecast, revenue receipts were found from assuming that in each year, revenue receipts in constant 1982 dollars grow at the same rate as from 1986-87, approximately 2.9 percent. The values for the low alternative forecast were determined by assuming that total revenue receipts in constant 1982 dollars grow at the same rate as do the economic forecasting firm Data Resources, Inc.'s forecasts for State and local government purchases of goods and services. The forecasts for State and local government purchases of goods and services were from Data Resources, Inc.'s trend scenario "Off-line U.S. Economic Service: Long-term Option." In the high alternative forecast, State grants (in constant dollars) were assumed to increase at a constant rate equal to the average of the rates of growth for the past 5 years, approximately 4.8 percent.

The numbers for average teacher salaries were from various issues of NEA's *Estimates of School Statistics*.

Both the past values and the forecast values for the population and disposable income per capita were from the trend scenario of Data Resources, Inc.'s "Off-line U.S. Economic Service: Long-term Option." The values for the all urban consumer price index, which was used for adjusting current expenditures, teacher salaries, and revenue receipts from State sources, and the implicit price deflator for personal consumption expenditures, which was used for adjusting disposable income per capita, were also from Data Resources, Inc.

Table 62.—Equations for current expenditures per pupil in average daily attendance and average annual salaries of teachers in public elementary and secondary schools

Dependent variable	Equation[1]	$\bar{R}^2$[2]	Durbin-Watson statistic[3]	Estimation technique	Rho
Current expenditures per pupil	ln(CUREXP) = −0.965 + 0.466ln(PCI) + 0.704ln(SGRANT) − 0.425ln(ADAPOP1) (−.76) (1.99) (5.20) (−4.41)	0.995	1.232	OLS[4]	
Average annual salaries	SALARY = −5889 + 4.79CUREXP + 81605ADAPOP + 0.00092DIFADA1 (−4.10) (20.72) (13.56) (6.62) +0.00051DIFADA2 (2.86)	0.985	1.604	AR1[5]	0.563 (2.86)

[1] The sample size in each case is 28.

[2] $\bar{R}^2$ equals the coefficient of determination corrected for degrees of freedom.

[3] For an explanation of the Durbin-Watson statistic see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

[4] OLS equals Ordinary Least Squares.

[5] AR1 is an estimation procedure for correcting the problem of first order autocorrelation. Specifically, the maximum likelihood procedure on the statistical program RATS was used to estimate rho. For a general discussion of the problem of autocorrelation, and the methods to correct it see Johnston (1972), Chapter 8. For a discussion of the method used to forecast in the presence of autocorrelation, see G. Judge, Hill, Griffiths, Lutkepohl, and Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, pages 315-318.

NOTE: Numbers in parentheses are t-statistics. This table was prepared December 1987.

Part 3: Technical Appendixes

Appendix A

Supplementary Tables

Table A1.—Annual number of births (U.S. Census Projections, Middle Series): 50 States and D.C., 1942 to 1997
(In thousands)

Year (Calendar)	Births
1942	3,002
1943	3,118
1944	2,954
1945	2,873
1946	3,426
1947	3,834
1948	3,655
1949	3,667
1950	3,645
1951	3,845
1952	3,933
1953	3,989
1954	4,102
1955	4,128
1956	4,244
1957	4,332
1958	4,279
1959	4,313
1960	4,307
1961	4,317
1962	4,213
1963	4,142
1964	4,070
1965	3,801
1966	3,642
1967	3,555
1968	3,535
1969	3,626
1970	3,739
1971	3,556
1972	3,258
1973	3,137
1974	3,160
1975	3,144
1976	3,168
1977	3,327
1978	3,333
1979	3,494
1980	3,612
1981	3,629
1982	3,681
1983	3,639
1984	3,690
1985	3,750
1986	3,855
1987*	3,687
Projected	
1988	3,758
1989	3,757
1990	3,731
1991	3,690
1992	3,645
1993	3,601
1994	3,558
1995	3,517
1996	3,481
1997	3,449

*Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, Estimates of the Population of the United States and Components of Change: 1970 to 1986*, Series P-25, No. 1006, May 1987 and unpublished projections.

Table A2.—Preprimary school-age populations (U.S. Census Projections, Middle Series): 50 States and D.C., 1972 to 1997

(In thousands)

Year (July 1)	3 years old	4 years old	5 years old	3-5 years old
1972	3,392	3,397	3,469	10,258
1973	3,486	3,452	3,397	10,335
1974	3,571	3,546	3,450	10,567
1975	3,277	3,635	3,546	10,458
1976	3,101	3,336	3,634	10,071
1977	3,035	3,155	3,334	9,524
1978	3,117	3,091	3,156	9,364
1979	3,077	3,175	3,092	9,344
1980	3,240	3,129	3,181	9,550
1981	3,270	3,281	3,135	9,686
1982	3,378	3,311	3,285	9,974
1983	3,505	3,419	3,313	10,237
1984	3,558	3,546	3,421	10,525
1985	3,612	3,599	3,548	10,759
1986	3,625	3,654	3,601	10,880
1987*	3,561	3,668	3,650	10,879
Projected				
1988	3,693	3,603	3,668	10,964
1989	3,677	3,636	3,604	10,917
1990	3,682	3,719	3,735	11,136
1991	3,693	3,725	3,719	11,137
1992	3,705	3,736	3,725	11,166
1993	3,689	3,747	3,734	11,170
1994	3,654	3,731	3,745	11,130
1995	3,610	3,696	3,730	11,036
1996	3,567	3,651	3,694	10,912
1997	3,523	3,607	3,649	10,779

*Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, Population Estimates and Projections*, Series P-25 and unpublished projections.

Table A3.—School-age populations (U.S. Census Projections, Middle Series), ages 5, 6, 5–13, and 14–17 years: 50 States and D.C., 1972 to 1997

(In thousands)

Year (July 1)	5 years old	6 years old	5–13 years old	14–17 years old
1972	3,469	3,582	35,679	16,639
1973	3,397	3,491	35,046	16,867
1974	3,450	3,414	34,465	17,035
1975	3,546	3,468	33,919	17,128
1976	3,634	3,560	33,516	17,119
1977	3,334	3,644	32,855	17,045
1978	3,156	3,343	32,094	16,946
1979	3,092	3,164	31,431	16,611
1980	3,181	3,112	31,095	16,142
1981	3,135	3,192	30,754	15,599
1982	3,285	3,144	30,614	15,041
1983	3,313	3,293	30,410	14,720
1984	3,421	3,321	30,238	14,704
1985	3,548	3,428	30,110	14,865
1986	3,601	3,555	30,346	14,797
1987*	3,650	3,612	30,813	14,465
		Projected		
1988	3,668	3,657	31,373	13,897
1989	3,604	3,674	31,802	13,476
1990	3,735	3,609	32,393	13,237
1991	3,719	3,741	32,826	13,335
1992	3,725	3,724	33,242	13,538
1993	3,734	3,729	33,547	13,773
1994	3,745	3,738	33,739	14,189
1995	3,730	3,750	33,865	14,509
1996	3,694	3,734	33,898	14,846
1997	3,649	3,698	33,873	15,090

*Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, Population Estimates and Projections*, Series P-25 and unpublished projections.

Table A4.—College-age populations (U.S. Census Projections, Middle Series), ages 18, 18–24, 25–29, 30–34, and 35–44 years: 50 States and D.C., 1972 to 1997

(In thousands)

Year (July 1)	18 years old	18–24 years old	25–29 years old	30–34 years old	35–44 years old
1972	3,976	26,076	15,240	12,383	22,859
1973	4,053	26,635	15,786	13,153	22,810
1974	4,103	27,233	16,521	13,704	22,826
1975	4,256	28,005	17,280	14,191	22,831
1976	4,266	28,645	18,274	14,485	23,093
1977	4,257	29,174	18,277	15,721	22,563
1978	4,247	29,622	18,683	16,280	24,437
1979	4,316	30,048	19,178	17,025	25,176
1980	4,243	30,350	19,804	17,822	25,868
1981	4,175	30,428	20,306	18,853	26,460
1982	4,115	30,283	20,865	18,876	28,115
1983	3,946	29,942	21,321	19,281	29,368
1984	3,734	29,391	21,660	19,769	30,619
1985	3,634	28,749	21,891	20,346	31,839
1986	3,562	27,973	22,136	20,848	33,142
1987*	3,632	27,353	22,109	21,404	34,371
			Projected		
1988	3,717	26,907	22,000	21,860	35,321
1989	3,792	26,590	21,832	22,194	36,550
1990	3,491	26,140	21,511	22,414	37,896
1991	3,307	25,700	20,909	22,641	39,360
1992	3,231	25,272	20,301	22,614	39,927
1993	3,305	24,991	19,689	22,497	40,765
1994	3,253	24,600	19,205	22,322	41,559
1995	3,399	24,281	18,965	21,997	42,338
1996	3,426	23,915	19,004	21,384	43,035
1997	3,532	23,953	18,837	20,766	43,546

*Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, Population Estimates and Projections*, Series P-25 and unpublished projections.

Table A5.—Average daily attendance in public elementary and secondary schools, the change in average daily attendance, the population, and average daily attendance to the population: 50 States and D.C., 1972–73 to 1997–98

Year	Average daily attendance[1] (in thousands)	Change in average daily attendance	Population[2] (in millions)	Ratio of average daily attendance to the population
1972-73	42,179	-75,272	212.0	0.199
1973-74	41,438	-740,946	214.0	0.194
1974-75	41,524	85,946	216.1	0.192
1975-76	41,270	-254,280	218.2	0.189
1976-77	40,832	-437,720	220.4	0.185
1977-78	40,080	-752,410	222.7	0.180
1978-79	39,076	-1,003,590	225.2	0.174
1979-80	38,289	-787,089	227.9	0.168
1980-81	37,704	-585,167	230.3	0.164
1981-82	37,095	-609,092	232.6	0.159
1982-83	36,636	-458,784	234.9	0.156
1983-84	36,363	-272,890	237.1	0.153
1984-85	36,499	136,461	239.4	0.152
1985-86	36,514	14,977	241.7	0.151
1986-87[3]	36,838	323,442	243.9	0.151
		Projected		
1987-88	37,297	458,952	246.1	0.152
1988-89	37,443	146,666	248.3	0.151
1989-90	37,829	385,230	250.5	0.151
1990-91	38,343	514,260	252.6	0.152
1991-92	38,875	531,897	254.6	0.153
1992-93	39,399	524,470	256.6	0.154
1993-94	39,928	529,112	258.5	0.154
1994-95	40,326	397,298	260.4	0.155
1995-96	40,635	309,113	262.2	0.155
1996-97	40,807	171,729	263.9	0.155
1997-98	40,828	21,350	265.6	0.154

[1] Projections of average daily attendance were made by multiplying the forecasts for enrollment reported earlier in this publication by the average value of the ratio average daily attendance to enrollment from 1980 to 1987, approximately .93.

[2] The value is for the year in which the school year ended. Hence the value for school year 1972-73 is for calendar year 1973.

[3] Average daily attendance is from the National Education Association. Population is a projected value.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*, and *Revenues and Expenditures for Public Elementary and Secondary Education:* Center for Education Statistics, Common Core of Data survey and unpublished data: Data Resources, Inc. "Off-line U.S. Economic Service: Long-term Option": and National Education Association, annual *Estimates of School Statistics*. (Latest edition 1986-87. Copyright by the National Education Association. All rights reserved.) (This table was prepared December 1987.)

Table A6.—Revenue receipts from State sources per capita (constant 1987 dollars[1]), with alternative projections: 50 States and D.C., 1972–73 to 1997–98

Year	Revenue receipts per capita		
1972-73	$252	—	—
1973-74	260	—	—
1974-75	266	—	—
1975-76	291	—	—
1976-77	278	—	—
1977-78	274	—	—
1978-79	279	—	—
1979-80	275	—	—
1980-81	273	—	—
1981-82	266	—	—
1982-83	274	—	—
1983-84	278	—	—
1984-85	296	—	—
1985-86[2]	313	—	—
1986-87[2]	320	—	—
	Middle alternative projections	**Low alternative projections**	**High alternative projections**
1987-88	$326	$321	$332
1988-89	332	322	345
1989-90	339	325	358
1990-91	346	328	372
1991-92	353	331	386
1992-93	361	335	402
1993-94	368	338	418
1994-95	376	342	434
1995-96	385	346	452
1996-97	393	350	470
1997-98	402	353	490

[1] Based on the all urban consumer price index of the Bureau of Labor Statistics, U.S. Department of Labor. Each value is adjusted by the CPI for the year in which the school year ended.

[2] These values were determined by using the growth rates from the values reported by the National Education Association.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*, and *Revenues and Expenditures for Public Elementary and Secondary Education:* Center for Education Statistics, Common Core of Data survey and unpublished data: National Education Association, annual *Estimates of State School Statistics.* (Latest edition 1986-87. Copyright 1987 by the National Education Association. All rights reserved.) (This table was prepared December 1987.)

Table A7.—Disposable income per capita (constant 1987 dollars), the all urban consumer price index (base year 1987), and the price deflator for personal consumption expenditures (base year 1987): 50 States and D.C., 1972–73 to 1997–98

Year	Disposable income per capita in constant 1987 dollars[1]	Consumer price index[1] (base year 1987)	Price deflator for personal consumption expenditures[1] (base year 1987)
1972–73	$10,743	0.391	0.417
1973–74	10,535	0.433	0.461
1974–75	10,626	0.473	0.497
1975–76	10,901	0.500	0.527
1976–77	11,145	0.533	0.561
1977–78	11,566	0.573	0.602
1978–79	11,677	0.638	0.658
1979–80	11,550	0.724	0.729
1980–81	11,606	0.799	0.796
1981–82	11,554	0.849	0.841
1982–83	11,798	0.876	0.876
1983–84	12,378	0.913	0.909
1984–85	12,621	0.946	0.940
1985–86	13,007	0.964	0.961
1986–87[2]	12,991	1.000	1.000
		Projected	
1987–88	13,215	1.046	1.044
1988–89	13,336	1.097	1.092
1989–90	13,453	1.150	1.144
1990–91	13,625	1.204	1.196
1991–92	13,821	1.266	1.255
1992–93	14,008	1.332	1.319
1993–94	14,188	1.404	1.389
1994–95	14,392	1.481	1.465
1995–96	14,592	1.563	1.546
1996–97	14,764	1.653	1.633
1997–98	14,966	1.748	1.726

[1] The value is for the year in which the school year ended. Hence the value for school year 1972–73 is for calendar year 1973.

[2] These are projected values.

SOURCE: Data Resources, Inc., "Off-line U.S. Economic Service: Long-term Option." (This table was prepared December 1987.)

Appendix B

Tables of Statistical Confidence Limits for Selected Projections

Table B1.—Public high school graduates as a percent of the 18-year-old population,* with forecasts and confidence limits: 1972–73 to 1997–98

Year	Ratio	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972–73	68.1	—	—
1973–74	67.8	—	—
1974–75	67.6	—	—
1975–76	66.5	—	—
1976–77	66.5	—	—
1977–78	66.3	—	—
1978–79	65.6	—	—
1979–80	64.0	—	—
1980–81	64.4	—	—
1981–82	64.9	—	—
1982–83	64.1	—	—
1983–84	64.6	—	—
1984–85	65.1	—	—
1985–86	65.8	—	—
1986–87	66.4	—	—
		Forecasts	
1987–88	66.8	65.0	68.5
1988–89	67.1	65.1	69.2
1989–90	67.5	65.2	69.8
1990–91	67.9	65.3	70.5
1991–92	68.2	65.3	71.1
1992–93	68.6	65.4	71.8
1993–94	69.0	65.5	72.5
1994–95	69.3	65.5	73.1
1995–96	69.7	65.6	73.8
1996–97	70.0	65.6	74.5
1997–98	70.4	65.7	75.2

*The number of 18-year-olds at their nearest birthday was computed as the average of the 17- and 18-year-old population.

SOURCES: U.S. Department of Education, Common Core of Data survey; and U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*. (This table was prepared December 1987.)

Table B2.—Associate degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972–73 to 1997–98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972–73	175,413	—	—
1973–74	188,591	—	—
1974–75	191,017	—	—
1975–76	209,996	—	—
1976–77	210,842	—	—
1977–78	204,718	—	—
1978–79	192,091	—	—
1979–80	183,737	—	—
1980–81	188,638	—	—
1981–82	196,939	—	—
1982–83	207,141	—	—
1983–84	202,762	—	—
1984–85	202,932	—	—
1985–86	196,166	—	—
1986–87*	188,000	—	—
	Projected		
1987–88	182,000	150,820	212,299
1988–89	181,000	150,534	212,010
1989–90	182,000	151,106	212,587
1990–91	183,000	151,962	213,454
1991–92	180,000	149,675	211,145
1992–93	178,000	147,381	208,843
1993–94	176,000	145,367	206,836
1994–95	175,000	144,502	205,977
1995–96	174,000	143,348	204,833
1996–97	175,000	144,214	205,691
1997–98	176,000	145,079	206,549

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B3.—Associate degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972–73 to 1997–98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972–73	140,761	—	—
1973–74	155,333	—	—
1974–75	169,154	—	—
1975–76	181,458	—	—
1976–77	195,535	—	—
1977–78	207,528	—	—
1978–79	210,611	—	—
1979–80	217,173	—	—
1980–81	227,739	—	—
1981–82	237,576	—	—
1982–83	249,300	—	—
1983–84	249,654	—	—
1984–85	251,780	—	—
1985–86	249,881	—	—
1986–87*	240,000	—	—
	Projected		
1987–88	242,000	224,564	258,768
1988–89	244,000	226,631	260,888
1989–90	245,000	228,106	262,403
1990–91	243,000	225,745	259,979
1991–92	237,000	220,134	254,228
1992–93	232,000	214,812	248,785
1993–94	228,000	211,261	245,160
1994–95	227,000	210,076	243,953
1995–96	227,000	210,373	244,255
1996–97	229,000	212,445	246,368
1997–98	232,000	214,812	248,785

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B4.—Bachelor's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972-73	518,191	—	—
1973-74	527,313	—	—
1974-75	504,841	—	—
1975-76	504,925	—	—
1976-77	495,545	—	—
1977-78	487,347	—	—
1978-79	477,344	—	—
1979-80	473,611	—	—
1980-81	469,883	—	—
1981-82	473,364	—	—
1982-83	479,140	—	—
1983-84	482,319	—	—
1984-85	482,528	—	—
1985-86	485,923	—	—
1986-87*	475,000	—	—
	Projected		
1987-88	474,000	458,382	510,394
1988-89	472,000	451,960	505,388
1989-90	471,000	435,464	497,700
1990-91	467,000	435,029	499,752
1991-92	466,000	431,649	499,582
1992-93	467,000	431,742	501,758
1993-94	465,000	428,349	501,438
1994-95	462,000	424,070	499,307
1995-96	456,000	416,398	494,628
1996-97	450,000	410,837	489,342
1997-98	445,000	406,231	483,660

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B5.—Bachelor's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972–73 to 1997–98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972–73	404,171	—	—
1973–74	418,463	—	—
1974–75	418,092	—	—
1975–76	420,821	—	—
1976–77	424,004	—	—
1977–78	433,857	—	—
1978–79	444,046	—	—
1979–80	455,806	—	—
1980–81	465,257	—	—
1981–82	479,634	—	—
1982–83	490,370	—	—
1983–84	491,990	—	—
1984–85	496,949	—	—
1985–86	501,900	—	—
1986–87*	512,000		
	Projected		
1987–88	515,000	497,833	520,123
1988–89	517,000	505,628	529,242
1989–90	513,000	500,717	524,665
1990–91	514,000	501,865	526,804
1991–92	518,000	504,953	531,091
1992–93	514,000	500,889	527,488
1993–94	504,000	490,831	518,224
1994–95	492,000	477,700	506,043
1995–96	481,000	466,036	495,800
1996–97	473,000	457,850	488,169
1997–98	471,000	455,626	485,630

*Estimate.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B6.—Master's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972–73 to 1997–98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972–73	154,468	—	—
1973–74	157,842	—	—
1974–75	161,570	—	—
1975–76	167,248	—	—
1976–77	167,783	—	—
1977–78	161,212	—	—
1978–79	153,370	—	—
1979–80	150,749	—	—
1980–81	147,043	—	—
1981–82	145,532	—	—
1982–83	144,697	—	—
1983–84	143,595	—	—
1984–85	143,390	—	—
1985–86	143,508	—	—
1986–87*	142,000	—	—
	Projected		
1987–88	142,000	124,778	159,756
1988–89	142,000	120,068	163,723
1989–90	142,000	115,305	167,743
1990–91	141,000	110,512	171,793
1991–92	141,000	105,701	175,862
1992–93	140,000	100,877	179,942
1993–94	140,000	96,045	184,032
1994–95	140,000	91,206	188,127
1995–96	139,000	86,363	192,228
1996–97	139,000	81,517	196,332
1997–98	139,000	76,667	200,438

*Estimate.

NOTE: Projections are based on data through 1985–86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B7.—Master's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972-73	108,903	—	—
1973-74	119,191	—	—
1974-75	130,880	—	—
1975-76	144,523	—	—
1976-77	149,381	—	—
1977-78	150,408	—	—
1978-79	147,709	—	—
1979-80	147,332	—	—
1980-81	148,696	—	—
1981-82	150,014	—	—
1982-83	145,224	—	—
1983-84	140,668	—	—
1984-85	142,861	—	—
1985-86	145,059	—	—
1986-87*	148,000	—	—
	Projected		
1987-88	148,000	124,194	170,873
1988-89	148,000	123,717	172,777
1989-90	148,000	123,167	174,753
1990-91	148,000	122,555	176,791
1991-92	149,000	121,889	178,884
1992-93	149,000	121,176	181,022
1993-94	149,000	120,424	183,201
1994-95	150,000	119,637	185,415
1995-96	150,000	118,819	187,658
1996-97	150,000	117,976	189,928
1997-98	151,000	117,109	192,221

*Estimate.

NOTE: Projections are based on data through 1985-86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B8.—Doctor's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972-73	28,571	—	—
1973-74	27,365	—	—
1974-75	26,817	—	—
1975-76	26,267	—	—
1976-77	25,142	—	—
1977-78	23,658	—	—
1978-79	23,541	—	—
1979-80	22,943	—	—
1980-81	22,711	—	—
1981-82	22,224	—	—
1982-83	21,902	—	—
1983-84	22,064	—	—
1984-85	21,700	—	—
1985-86	21,819	—	—
1986-87*	22,100	—	—
	Projected		
1987-88	21,100	18,857	23,245
1988-89	20,800	18,288	23,374
1989-90	20,600	17,708	23,514
1990-91	20,400	17,119	23,662
1991-92	20,200	16,526	23,815
1992-93	20,000	15,928	23,971
1993-94	19,700	15,328	24,131
1994-95	19,500	14,725	24,293
1995-96	19,300	14,121	24,457
1996-97	19,100	13,515	24,622
1997-98	18,800	12,909	24,788

*Estimate.

NOTE: Projections are based on data through 1985-86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B9.—Doctor's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1972-73 to 1997-98

Year	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972-73	6,206	—	—
1973-74	6,451	—	—
1974-75	7,266	—	—
1975-76	7,797	—	—
1976-77	8,090	—	—
1977-78	8,473	—	—
1978-79	9,189	—	—
1979-80	9,672	—	—
1980-81	10,247	—	—
1981-82	10,483	—	—
1982-83	10,873	—	—
1983-84	11,145	—	—
1984-85	11,243	—	—
1985-86	11,834	—	—
1986-87*	12,100	—	—
	Projected		
1987-88	12,400	11,441	13,425
1988-89	12,800	11,704	13,858
1989-90	13,100	11,962	14,296
1990-91	13,500	12,217	14,737
1991-92	13,800	12,469	15,181
1992-93	14,200	12,719	15,628
1993-94	14,500	12,967	16,076
1994-95	14,900	13,213	16,526
1995-96	15,200	13,458	16,978
1996-97	15,600	13,702	17,430
1997-98	15,900	13,945	17,883

*Estimate.

NOTE: Projections are based on data through 1985-86. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, Center for Education Statistics, Degrees and Other Formal Awards Conferred survey and Integrated Postsecondary Education Data System (IPEDS), Sample Survey of Early National Estimates, 1987. (This table was prepared November 1987.)

Table B10.—Classroom teachers in public elementary and secondary schools, with alternative forecasts and confidence limits: 50 States and D.C., fall 1972 to fall 1997

(In thousands)

Year	Elementary			Secondary		
	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit	Number	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972	1,140	—	—	963	—	—
1973	1,149	—	—	984	—	—
1974	1,167	—	—	998	—	—
1975	1,180	—	—	1,016	—	—
1976	1,166	—	—	1,020	—	—
1977	1,185	—	—	1,024	—	—
1978	1,190	—	—	1,016	—	—
1979	1,190	—	—	993	—	—
1980	1,177	—	—	985	—	—
1981	1,155	—	—	962	—	—
1982	1,165	—	—	945	—	—
1983	1,178	—	—	948	—	—
1984	1,205	—	—	963	—	—
1985	1,237	—	—	970	—	—
1986	1,267	—	—	977	—	—
1987*	1,284	—	—	992	—	—
			Middle alternative forecasts			
1988	1,316	1,293	1,340	997	979	1,014
1989	1,339	1,315	1,363	994	975	1,012
1990	1,360	1,335	1,384	995	975	1,014
1991	1,378	1,354	1,403	1,003	983	1,023
1992	1,398	1,373	1,423	1,020	1,000	1,041
1993	1,418	1,392	1,443	1,041	1,021	1,062
1994	1,436	1,410	1,461	1,064	1,044	1,085
1995	1,453	1,428	1,479	1,091	1,070	1,111
1996	1,472	1,446	1,497	1,114	1,093	1,135
1997	1,488	1,462	1,514	1,134	1,112	1,155
			Low alternative forecasts			
1988	1,305	1,280	1,330	989	972	1,006
1989	1,323	1,297	1,350	983	966	1,001
1990	1,339	1,312	1,367	981	964	999
1991	1,354	1,325	1,383	986	969	1,004
1992	1,369	1,338	1,399	1,001	983	1,019
1993	1,384	1,352	1,416	1,019	1,001	1,036
1994	1,397	1,364	1,431	1,038	1,021	1,056
1995	1,410	1,375	1,444	1,061	1,044	1,079
1996	1,423	1,387	1,459	1,081	1,063	1,099
1997	1,433	1,396	1,470	1,097	1,079	1,115
			High alternative forecasts			
1988	1,330	1,307	1,353	1,006	986	1,025
1989	1,360	1,337	1,383	1,008	986	1,030
1990	1,389	1,365	1,412	1,014	989	1,039
1991	1,416	1,391	1,440	1,028	1,000	1,055
1992	1,444	1,418	1,470	1,151	1,022	1,081
1993	1,473	1,446	1,500	1,079	1,046	1,111
1994	1,501	1,472	1,530	1,108	1,073	1,143
1995	1,529	1,497	1,561	1,141	1,103	1,179
1996	1,558	1,523	1,594	1,172	1,131	1,213
1997	1,587	1,547	1,627	1,200	1,155	1,245

*Estimate.

SOURCES: U.S. Department of Education, Common Core of Data survey; and National Education Association, *Estimates of School Statistics*. (This table was prepared December 1987.)

Table B11.—Current expenditures per pupil in average daily attendance (constant 1987 dollars) in public elementary and secondary schools, with alternative projections and confidence limits: 50 States and D.C., 1972–73 to 1997–98

Year	Constant 1987 dollars[1]		
	Per pupil in average daily attendance	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1972–73	$2,799	—	—
1973–74	2,785	—	—
1974–75	2,916	—	—
1975–76	3,005	—	—
1976–77	3,073	—	—
1977–78	3,179	—	—
1978–79	3,165	—	—
1979–80	3,136	—	—
1980–81	3,129	—	—
1981–82	3,212	—	—
1982–83	3,374	—	—
1983–84	3,475	—	—
1984–85	3,647	—	—
1985–86	3,893	—	—
1986–87[2]	3,966	—	—
		Middle alternative projections	
1987–88	4,056	$3,852	$4,271
1988–89	4,125	3,917	4,343
1989–90	4,209	3,994	4,434
1990–91	4,292	4,073	4,521
1991–92	4,374	4,152	4,607
1992–93	4,455	4,231	4,692
1993–94	4,539	4,310	4,780
1994–95	4,627	4,394	4,873
1995–96	4,723	4,485	4,975
1996–97	4,822	4,577	5,079
1997–98	4,934	4,683	5,199
		Low alternative projections	
1987–88	4,011	3,810	4,222
1988–89	4,038	3,835	4,250
1989–90	4,087	3,882	4,304
1990–91	4,132	3,923	4,353
1991–92	4,180	3,965	4,407
1992–93	4,227	4,004	4,462
1993–94	4,274	4,042	4,518
1994–95	4,324	4,082	4,580
1995–96	4,382	4,129	4,651
1996–97	4,439	4,176	4,718
1997–98	4,505	4,230	4,797
		High alternative projections	
1987–88	4,108	3,898	4,329
1988–89	4,230	4,008	4,465
1989–90	4,371	4,130	4,627
1990–91	4,514	4,257	4,787
1991–92	4,659	4,387	4,949
1992–93	4,807	4,517	5,115
1993–94	4,959	4,650	5,289
1994–95	5,120	4,791	5,471
1995–96	5,293	4,940	5,672
1996–97	5,472	5,087	5,886
1997–98	5,671	5,252	6,124

[1] Based on the all urban consumer price index of the Bureau of Labor Statistics, U.S. Department of Labor. Each value is adjusted by the CPI for the year in which the school year ended.

[2] Estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*, and *Revenues and Expenditures for Public Elementary and Secondary Education:* Center for Education Statistics, Common Core of Data survey and unpublished data: and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1986–87. Copyright 1987 by the National Education Association. All rights reserved.) (This table was prepared December 1987.)

Table B12.—Average annual salaries of classroom teachers (constant 1987 dollars) in public elementary and secondary schools, with alternative projections and confidence limits: 50 States and D.C., 1972–73 to 1997–98

Year	Constant 1987 dollars[1]		
	Average annual salary	Lower 95 percent confidence limit[2]	Upper 95 percent confidence limit[2]
1972-73	$26,051	—	—
1973-74	24,864	—	—
1974-75	24,695	—	—
1975-76	25,181	—	—
1976-77	25,056	—	—
1977-78	24,758	—	—
1978-79	23,549	—	—
1979-80	22,049	—	—
1980-81	22,070	—	—
1981-82	22,713	—	—
1982-83	23,628	—	—
1983-84	24,001	—	—
1984-85	24,951	—	—
1985-86	26,154	—	—
1986-87	26,704	—	—
		Middle alternative projections	
1987-88	27,428	$26,826	$28,030
1988-89	28,015	27,224	28,806
1989-90	28,183	27,336	29,031
1990-91	28,727	27,823	29,630
1991-92	29,485	28,496	30,474
1992-93	30,056	29,013	31,098
1993-94	30,544	29,466	31,622
1994-95	31,009	29,896	32,121
1995-96	31,343	30,217	32,469
1996-97	31,605	30,474	32,737
1997-98	31,856	30,717	32,995
		Low alternative projections	
1987-88	27,209	26,616	27,803
1988-89	27,598	26,828	28,368
1989-90	27,601	26,783	28,419
1990-91	27,964	27,104	28,824
1991-92	28,558	27,627	29,488
1992-93	28,960	27,991	29,930
1993-94	29,274	28,284	30,264
1994-95	29,557	28,547	30,566
1995-96	29,708	28,699	30,717
1996-97	29,771	28,772	30,770
1997-98	29,798	28,808	30,788
		High alternative projections	
1987-88	27,676	27,063	28,288
1988-89	28,521	27,702	29,340
1989-90	28,963	28,072	29,855
1990-91	29,794	28,822	30,766
1991-92	30,854	29,769	31,939
1992-93	31,740	30,573	32,906
1993-94	32,558	31,327	33,789
1994-95	33,370	32,073	34,667
1995-96	34,072	32,729	35,416
1996-97	34,722	33,337	36,106
1997-98	35,387	33,959	36,815

[1] Based on the all urban consumer price index of the Bureau of Labor Statistics, U.S. Department of Labor. Each value is adjusted by the CPI for the year in which the school year ended.

[2] These confidence limits were calculated by using an equation for computing the asymptotic mean square error when AR1 has been used to correct for first order autocorrelation. This equation is equation (8.3.14) of G. Judge, Griffiths, Hill, Lutkepohl, and Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, page 318.

SOURCE: National Education Association, annual *Estimates of School Statistics*. (Latest edition 1986-87. Copyright 1987 by the National Education Association. All rights reserved.) (This table was prepared December 1987.)

Appendix C

Data Sources

Sources and Comparability of Data

The information in this report is from many sources including Federal and State agencies, private research organizations, and professional associations. The data were collected by many methods including surveys of a universe (such as all colleges) or of a sample, and compilations of administrative records. Use care when comparing data from different sources. Differences in procedures, such as timing, phrasing of questions, and interviewer training mean that the results from the different sources are not strictly comparable. More extensive documentation of one survey's procedures than of another's does not imply more problems with the data, only that more information is available.

Accuracy of Data

The accuracy of any statistic is determined by the joint effects of "sampling" and "nonsampling" errors. Estimates based on a sample will differ from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, and procedures. Besides sampling errors, all surveys, both universe and sample, are subject to errors of design, reporting, processing, and errors due to nonresponse. To the extent possible, these nonsampling errors are kept to a minimum by methods built into the survey procedures. In general, however, the effects of nonsampling errors are more difficult to gauge than those produced by sampling variability.

Sampling Errors

The standard error is the primary measure of sampling variability. It provides a specific range—with a stated confidence—within which a given estimate would lie if a complete census had been conducted. The chances that a complete census would differ from the sample by less than the standard error are about 68 out of 100. The chances that the difference would be less than 1.65 times the standard error are about 90 out of 100; that the difference would be less than 1.96 times the standard error, about 95 out of 100; and that it would be less than 2.5 times as large, about 99 out of 100.

Standard error can help assess how valid a comparison between two estimates might be. The standard error of a difference between two sample estimates is approximately equal to the square root of the sum of the squared standard errors of the estimates. The standard error (se) of the difference between sample estimate "a" and sample estimate "b" is:

$$se = \sqrt{se + se - 2se}$$

Note that most of the standard errors in subsequent sections and in the original documents are approximations. That is, to derive estimates of standard errors that would be applicable to a wide variety of items and could be prepared at a moderate cost, a number of approximations were required. As a result, most of the standard errors presented provide a general order of magnitude rather than the exact standard error for any specific item.

Nonsampling Errors

Both universe and sample surveys are subject to nonsampling errors. Nonsampling errors are of two kinds—random and nonrandom. Random nonsampling errors may arise when respondents or interviewers interpret questions differently, when respondents must estimate values, or when coders, keyers, and other processors handle answers differently. Nonrandom nonsampling errors result from total nonresponse (no usable data obtained for a sampled unit), partial or item nonresponse (only a portion of a response may be usable), inability or unwillingness on the part of respondents to provide information, difficulty interpreting questions, mistakes in recording or keying data, errors of collection or processing, and overcoverage or undercoverage of the target universe. Random nonresponse errors usually, but not always, result in an under-statement of sampling errors and thus an overstatement of the precision of survey estimates. Since estimating the magnitude of nonsampling errors would require special experiments or access to independent data, these magnitudes are seldom available.

To compensate for suspected nonrandom errors, adjustments of the sample estimates are often made. For example, adjustments are frequently made for nonresponse, both total and partial. An adjustment made for either type of nonresponse is often referred to as as an imputation, that is substitution of the "average" questionnaire response for the nonresponse. Imputations are usually made separately within various groups of sample members which have similar survey characteristics. Imputation for item nonresponse is usually made by substituting for a missing item the response to that item of a respondent having characteristics that are similar to those of the nonrespondent.

Although the magnitude of nonsampling error in the data collected in this *Projections* is frequently unknown, idiosyncrasies that have been identified are noted on the appropriate tables.

Federal Agency Sources

National Center for Education Statistics (NCES)

Common Core of Data

NCES uses the Common Core of Data (CCD) survey to acquire and maintain statistical data on the 50 States, the District of Columbia, and the outlying areas from the universe of State-level education agencies. Information about staff and students is collected annually at the school, LEA (local education agency or school district), and State levels. Information about revenues and expenditures is also collected at the State level.

Data are collected for a particular school year (July 1 through June 30) by survey instruments sent to the States by October 15 of the subsequent school year. States have 2 years in which to modify the data originally submitted.

Since the CCD is a universe survey, the CCD information in *Projections* is not subject to sampling error. However, nonsampling error could come from two sources—nonreturn and inaccurate reporting. Almost all of the States submit the six CCD survey instruments each year, but there are many delays in submitting data and the submissions are sometimes incomplete.

Understandably, when 57 education agencies compile and submit data for over 85,000 public schools and approximately 15,800 local school districts, misreporting can occur. Typically, this results from varying interpretation of NCES definitions and differing recordkeeping systems. NCES attempts to minimize these errors by working closely with the Council of Chief State School Officers (CCSSO) and its Committee on Evaluation and Information Systems (CEIS).

The State education agencies report data to NCES from data collected and edited in the regular reporting cycles for which NCES reimburses them. NCES encourages the agencies to incorporate into their own survey systems the NCES items they do not collect so those items will also be available for the subsequent CCD survey. Over time this has meant fewer missing data cells in each State's response, reducing the need to impute data.

NCES subjects data from the education agencies to a comprehensive edit. Where data are determined to be inconsistent, missing, or out of range, NCES asks the education agencies for verification. NCES-prepared State summary forms are returned to the State education agencies for verification. States are also given an opportunity to revise their State-level aggregates from the previous cycle.

Questions concerning the Common Core of Data can be directed to:

Suzanne Triplett
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Higher Education General Information Survey

The Higher Education General Information Survey (HEGIS) was a coordinated effort administered by NCES to acquire and maintain statistical data on the characteristics and operations of institutions of higher education. Developed in 1966, HEGIS was an annual universe survey of institutions listed in the NCES *Education Directory, Colleges and Universities.*

The information presented in this report draws on HEGIS surveys which solicited information concerning institutional characteristics, faculty salaries, finances, enrollment, and degrees. Since these surveys cover all institutions in the universe, the data are not subject to sampling error. However, they are subject to nonsampling error, the sources of which vary with the survey instrument. Each survey will therefore be discussed separately. Information concerning the nonsampling error of the enrollment and degrees surveys is drawn extensively from the HEGIS Post-Survey Validation Study conducted in 1979.

Institutional Characteristics of Colleges and Universities. This survey provides the basis for the universe of institutions in the *Education Directory, Colleges and Universities*, and it is used in all other HEGIS data collection activities. The universe comprises institutions that offer at least a 1-year program of college-level studies leading toward a degree and that meet certain accreditation criteria. In the fall, institutions included in the *Directory* the previous year receive a computer printout of their information to update. Institutions not previously included and that applied for *Directory* listing are sent a questionnaire. All institutions reported are certified as eligible to be listed by the Division of Eligibility and Agency Evaluation, U.S. Department of Education.

Opening Fall Enrollment in Colleges and Universities. This survey has been part of the HEGIS series since its development. The enrollment survey does not appear to suffer significantly from problems associated with nonresponse: The 1985 response rate was 92 percent. Major sources of nonsampling error for this survey are classification problems, the unavailability of needed data, interpretation of definitions, the survey due date, and operational errors. Of these, the classification of students appears to be the main source of errors. Institutions have problems in correctly classifying first-time freshmen, other first-time students, and unclassified students for both full-time and part-time categories. These problems occur most often at 2-year institutions (both private and public) and private 4-year institutions. In 1977–78, the classification problem led to an estimated overcount of 11,000 full-time students and an undercount of 19,000 part-time students. Although the ratio of error to the grand total was small (less than 1 percent), the percentage of errors was as high as 5 percent for detailed student levels and even higher at certain aggregation levels.

Earned Degrees Conferred. This survey has been part of the HEGIS series since its development. However, the degree classification taxonomy was revised in 1970–71 and 1982–83. Though information from survey years 1970–71 through 1981–82 is directly comparable, care must be taken if information before or after that period is included in any comparison. Degrees-conferred trend tables arranged by the 1982–83 classification have been added to the *Digest of Education Statistics* to provide consistent data from 1970–71 to 1983–84. Data in this edition on associate and other formal awards below the baccalaureate are not directly comparable with figures for earlier years. The nonresponse rate does not appear to be a significant source of nonsampling error for this survey. The return rate over the years has been extremely high, with the response rate for the 1983–84 survey at 95 percent. Because of the high return rate, nonsampling error caused by imputation would also be minimal.

The major sources of nonsampling error for this survey are differences between the HEGIS program taxonomy and taxonomies used by the colleges, classification of double majors and double degrees, operational problems, and survey timing. In the 1979 validation study, these sources of nonsampling error were found to contribute to an error rate of 0.3 percent overreporting of bachelor's degrees and 1.3 percent overreporting of master's degrees. The differences, however, varied greatly among fields. Over 50 percent of the fields selected for the validation study had no errors identified. Categories of fields which had large differences were business and management, education, engineering, letters, and psychology. It is also shown that differences in proportion to the published figures were less than 1 percent for most of the selected fields which had some errors. Exceptions to these were: master's and doctoral programs in labor and industrial relations (20 percent and 8 percent); bachelors's and master's programs in art education (3 percent and 4 percent); bachelor's and doctoral programs in business and commerce, and in distributive education (5 percent and 9 percent); master's programs in philosophy (8 percent); and doctoral programs in psychology (11 percent).

Questions concerning the surveys used as data sources for this report or other questions concerning HEGIS can be directed to:

Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Bureau of the Census

Current Population Survey

Estimates of school enrollment as well as social and economic characteristics of students are based on data collected in the Census Bureau's monthly survey of about 60,000 households. The monthly Current Population Survey (CPS) sample is of 614 areas comprising 1,113 counties, independent cities, and minor civil divisions throughout the 50 States and the District of Columbia. The sample was initially selected from the 1970 census files and is periodically updated to reflect new housing construction.

The monthly CPS deals primarily with labor force data for the civilian noninstitutional population (i.e., excluding military personnel and their families living on post and inmates of institutions). In addition, supplemental questions are asked about the education of all eligible members of the household. The October 1982 survey obtained information about highest grade completed, level of current enrollment, attendance status, number and types of courses, degree or certificate objective, and type of organization offering instruction. Information on enrollment status by grade is gathered each October.

The estimation procedure used for the monthly CPS data involves inflating weighted sample results to independent estimates of characteristics of the civilian noninstitutional population in the United States by age, sex, and race. These independent estimates are based on statistics from decennial censuses; statistics on births, deaths, immigration, and emigration; and statistics on the population in the armed services. Generalized standard error tables are in the *Current Population Reports.* The data are subject to both nonsampling and sampling errors.

More information is available in the *Current Population Reports,* Series P-20, or by contacting:

Population Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

School Enrollment. Each October, the Current Population Survey (CPS) includes supplemental questions on the enrollment status of the populations 3 years old and over. The main sources of nonsampling variability in the responses to the supplement are those inherent in the survey instrument. The question concerning educational attainment may be sensitive for some respondents, who may not want to acknowledge the lack of a high school diploma. The question of current enrollment may not be answered accurately for various reasons. Some respondents may not know current grade information for every student in the household, a problem especially prevalent for households with members in college or in nursery school. Confusion over college credits or hours taken by a student may make it difficult to detemine the year in which the student is enrolled. Problems may occur with the definition of nursery school (a group or class organized to provide educational experiences for children) where respondents' interpretations of "educational experiences" vary.

Questions concerning the CPS "School Enrollment" survey may be directed to:

Education and Social Stratification Branch
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

Other Organization Sources

National Education Association

Estimates of School Statistics

The National Education Association (NEA) reports revenues and expenditure data in its annual publication, *Estimates of School Statistics.* Each year NEA prepares regression-based estimates of financial and other education statistics and submits them to the States for verification. Generally about 30 States adjust these estimates based on their own data. These preliminary data are published by NEA along with revised data from previous years. States are asked to revise previously submitted data as final figures become available. The most recent publication contains all changes reported to the NEA.

Some tables use revised estimates of financial data prepared by NEA because it was the most current source. Since expenditure data reported to NCES must be certified for use in Department of Education formula grant programs (such as Chapter I of the Education Consolidation and Improvement Act), NCES data are not available as soon as NEA estimates.

Further information on NEA surveys can be obtained from:

National Education Association—Research
1201 16th Street NW
Washington, DC 20036

Status of the American Public School Teacher

The Status of the American Public School Teacher survey is conducted every 5 years by the National Education Association (NEA). The survey was designed by the NEA Research Division and initially administered in 1956. The intent of the survey is to solicit information covering various aspects of public school teachers' professional, family, and civic lives. Participants for the survey are selected using a two-stage sample design, with the first-stage stratum determined by the number of students enrolled in the districts. Selection probabilities are determined so that the resulting sample is self-weighting. In 1980-81, a sample of 1,768 was selected from the approximately 2.185 million public school teachers, and 1,326 usable replies were obtained, yielding a response rate of 75 percent.

Possible sources of nonsampling errors are nonresponses, misinterpretation, and—when comparing data over years—changes in the sampling method and instrument. Misinterpretation of the survey items should be minimal, as the sample responding is not from the general population but one knowledgeable about the area of concern. Since the sampling procedure changed after 1956, and some wording of items has changed over the different administrations, care is taken to present only comparable data.

Questions concerning the "Status of the American Public School Teacher" survey may be directed to:

National Education Association—Research
1201 16th Street NW
Washington, DC 20036

Data Resources, Inc.

Data Resources, Inc. (DRI) provides an information system that includes more than 125 data bases; simulation and planning models; regular publications and special studies; data retrieval and managements systems; and access to experts on economic, financial, industrial, and market activities. One service is the DRI U.S. Annual Model Forecast Data Bank which contains annual projections of U.S. economic and financial conditions, including forecasts for the Federal Government, incomes, population, prices and wages, and State and local government, over a long-term, (10- to 25- year), forecast period.

Additional information is available from:

Data Resources, Inc.
24 Hartwell Avenue
Lexington, MA 02173

Appendix D

Glossary

Data Terms

Associate degree: A degree granted for the successful completion of a sub-baccalaureate program of studies, usually requiring at least 2 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work/study program.

Average daily attendance (ADA): The aggregate attendance of a school during a reporting period (normally a school year) divided by the number of days school is in session during this period. Only days on which the pupils are under the guidance and direction of teachers should be considered days in session.

Average daily membership (ADM): The aggregate membership of a school during a reporting period (normally a school year) divided by the number of days school is in session during this period. Only days on which the pupils are under the guidance and direction of teachers should be considered as days in session. The average daily membership for groups of schools having varying lengths of terms is the average of the average daily memberships obtained for the individual schools.

Bachelor's degree: A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least 4 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work/study program.

Class size: The membership of a class at a given date.

Classroom teacher: A staff member assigned the professional activities of instructing pupils in self-contained classes or courses, or in classroom situations. Usually expressed in full-time-equivalents.

Cohort: A group of individuals that have a statistical factor in common, for example, year of birth.

College: A postsecondary school which offers general or liberal arts education, usually leading to an associate, bachelor's, master's, doctor's, or first-professional degree. Junior colleges and community colleges are included in this term.

Constant dollars: Dollar amounts that have been adjusted by means of price and cost indexes to eliminate inflationary factors and allow direct comparison across years.

Consumer Price Index (CPI): This price index measures the average change in the cost of a fixed market basket of goods and services purchased by consumers.

Current expenditures (elementary/secondary): The expenditures for operating local public schools excluding capital outlay and interest on school debt. These expenditures include such items as salaries for school personnel, fixed charges, student transportation, school books and materials, and energy costs.

Current expenditures per pupil in average daily attendance: Current expenditures for the regular school term divided by the average daily attendance of full-time pupils (or full-time equivalency of pupils) during the term. See also current expenditures and average daily attendance.

Current Population Survey: See Data Sources.

Disposable personal income: Current income received by persons less their contributions for social insurance, personal tax, and nontax payments. It is the income available to persons for spending and saving. Nontax payments include passport fees, fines and penalties, donations, and tuitions and fees paid to schools and hospitals operated mainly by the government. See also personal income.

Doctor's degree: An earned degree carrying the title of doctor. The Doctor of Philosophy degree (Ph.D.) is the highest academic degree and requires mastery within a field of knowledge and demonstrated ability to perform scholarly research. Other doctorates are awarded for fulfilling specialized requirements in professional fields, such as education (Ed.D.), musical arts (D.M.A.), business administration (D.B.A.), and engineering (D.Eng. or D.E.S.). Many doctor's degrees in both academic and professional fields require an earned master's degree as a prerequisite. First-professional degrees, such as M.D. and D.D.S., are not included under this heading.

Elementary school: A school classified as elementary by State and local practice and composed of any span of grades not above grade 8. A preschool or kindergarten school is included under this heading only if it is an integral part of an elementary school or a regularly established school system.

Elementary/secondary school: As reported in this publication, includes only regular school, i.e., schools that are part of State and local school systems, and also most not-for-profit private elementary/secondary schools, both religiously affiliated and nonsectarian. Schools not reported include subcollegiate departments of institutions of higher education, residential schools for exceptional children, Federal schools for Indians, and Federal schools on military posts and other Federal installations.

Enrollment: The number of students registered in a given school unit at a given time, generally in the fall of a year.

Expenditures: Charges incurred, whether paid or unpaid, which are presumed to benefit the current fiscal year. For elementary/secondary schools, these include all charges for current outlays plus capital outlays and interest on school debt. For institutions of higher education, these include current outlays plus capital outlays. For government, these include charges net of recoveries and other correcting transactions other than for retirement of debt, investment in securities, extension of credit, or as agency transaction. Government expenditures include only external transactions, such as the provision of perquisites or other payments in kind. Aggregates for groups of governments exclude intergovernmental transactions among the governments.

Expenditures per pupil: Charges incurred for a particular period of time divided by a student unit of measure, such as average daily attendance or average daily membership.

First-professional degree: A degree that signifies both completion of the academic requirements for beginning practice in a given profession and a level of professional skill beyond that normally required for a bachelor's degree. This degree usually is based on a program requiring at least 2 academic years of work before entrance and a total of at least 6 academic years of work to complete the degree program, including both prior-required college work and the professional program itself. By NCES definition, first-professional degrees are awarded in the fields of dentistry (D.D.S. or D.M.D.), medicine (M.D.), optometry (O.D.), osteopathic medicine (D.O.), pharmacy (D.Phar.), podiatric medicine (D.P.M.), veterinary medicine (D.V.M.), chiropractic (D.C. or D.C.M.), law (LL.B. or J.D.), and theological professions (M.Div. or M.H.L.).

First-professional enrollment: The number of students enrolled in a professional school or program which requires at least 2 years of academic college work for entrance and a total of at least 6 years for a degree. By NCES definition, first-professional enrollment includes only students in certain programs. (See first-professional degree for a list of programs.)

Full-time-equivalent (FTE) enrollment: For institutions of higher education, enrollment of full-time students, plus the full-time equivalent of part-time students as reported by institutions. In the absence of an equivalent reported by an institution, the FTE enrollment is estimated by adding one-third of part-time enrollment to full-time enrollment.

Full-time instructional faculty: Those members of the instructional/research staff who are employed full time as defined by the institution, including faculty with released time for research and faculty on sabbatical leave. Full-time counts exclude faculty who are employed to teach less than two semesters, three quarters, two trimesters, or two 4-month sessions; replacements for faculty on sabbatical leave or those on leave without pay; faculty for preclinical and clinical medicine; faculty who are donating their services; faculty who are members of military organizations and paid on a different pay scale from civilian employees; academic officers, whose primary duties are administrative; and graduate students who assist in the instruction of courses.

Full-time enrollment: The number of students enrolled in higher education courses with total credit load equal to at least 75 percent of the normal full-time course load.

Full-time worker: In educational institutions, an employee whose position requires being on the job on school days throughout the school year at least the number of hours the schools are in session. For higher education, a member of an educational institution's staff who is employed full time.

Graduate: An individual who has received formal recognition for the successful completion of a prescribed program of studies.

Graduate enrollment: The number of students who hold the bachelor's or first-professional degree, or the equivalent, and who are working towards a master's or doctor's degree. First-professional students are counted separately. These enrollment data measure those students who are registered at a particular time during the fall. At some institutions, graduate enrollment also includes students who are in postbaccalaureate classes but not in degree programs. In specified tables, graduate enrollment includes all students in regular graduate programs and all students in postbaccalaureate classes but not in degree programs (unclassified postbaccalaureate students).

Higher education: Study beyond secondary school at an institution that offers programs terminating in an associate, baccalaureate, or higher degree.

Higher education institutions (traditional classification):

4-year institution: An institution legally authorized to offer and offering at least a 4-year program of college-level studies wholly or principally creditable toward a bachelor's degree. In some tables a further division between universities and other 4-year institutions is made. A "university" is a postsecondary institution which typically comprises one or more graduate professional schools (also see university). For purposes of trend comparisons in this volume, the selection of universities has been held constant for all tabulations after 1982. "Other 4-year institutions" would include the rest of the nonuniversity 4-year institutions.

2-year institution: An institution legally authorized to offer and offering at least a 2-year program of college-level studies which terminates in an associate degree or is principally creditable toward a baccalaureate.

High school: A secondary school offering the final years of high school work necessary for graduation, usually including grades 10, 11, and 12 (in a 6-2-4 plan).

Instructional staff: Full-time-equivalent number of positions, not the number of different individuals occupying the positions during the school year. In local schools it includes all public elementary and secondary (junior and senior high) day-school positions that are in the nature of teaching or the improvement of the teaching-learning situation. Includes consultants or supervisors of instruction, principals, teachers, guidance personnel, librarians, psychological personnel, and other instructional staff. Excludes administrative staff, attendance personnel, clerical personnel, and junior college staff.

Master's degree: A degree awarded for successful completion of a program generally requiring 1 or 2 years of full-time college-level study beyond the bachelor's degree. One type of master's degree, including the Master of Arts degree, or M.A., and the Master of Science degree, or M.S., is awarded in the liberal arts and sciences for advanced scholarship in a subject field or discipline and demonstrated ability to perform scholarly research. A second type of master's degree is awarded for the completion of a professionally oriented program, for example, an M.Ed. in education, an M.B.A. in business administration, an M.F.A. in fine arts, an M.M. in music, an M.S.W. in social work, and an M.P.A. in public administration. A third type of master's degree is awarded in professional fields for study beyond the first-professional degree, for example, the Master of Laws (LL.M.) and Master of Science in various medical specializations.

Newly qualified teacher: Persons who (1) first became eligible for a teaching license during the period of the study referenced or who were teaching at the time of survey but were not certified or eligible for a teaching license and (2) had never held full-time, regular teaching positions (as opposed to substitute) before completing the requirements for the degree that brought them into the survey.

Part-time enrollment: The number of students enrolled in higher education courses with a total credit load less than 75 percent of the normal full-time credit load.

Personal income: Current income received by persons from all sources minus their personal contributions for social insurance. Classified as "persons" are individuals (including owners of unincorporated firms), nonprofit institutions serving individuals, private trust funds, and private noninsured welfare funds. Personal income includes transfers (payments not resulting from current production) from government and business such as social security benefits, military pensions, etc., but excludes transfers among persons.

Postbaccalaureate enrollment: The number of graduate and first-professional students working towards advanced degrees and of students enrolled in graduate-level classes but not enrolled in degree programs. See also graduate enrollment and first-professional enrollment.

Private institution: A school or institution that is controlled by an individual or agency other than a State, a subdivision of a State, or the Federal Government, which is usually supported primarily by other than public funds, and the operation of whose program rests with other than publicly elected or appointed officials.

Property tax: The sum of money collected from a tax levied against the value of property.

Proprietary institution: An educational institution that is under private control but whose profits derive from revenues subject to taxation.

Public school or institution: A school or institution controlled and operated by publicly elected or appointed officials and deriving its primary support from public funds.

Pupil-teacher ratio: The enrollment of pupils at a given period of time, divided by the full-time-equivalent number of classroom teachers serving these pupils during the same period.

Revenues: All funds received from external sources, net of refunds, and correcting transactions. Noncash transactions such as receipt of services, commodities, or other receipts "in kind" are excluded as are funds received from the issuance of debt, liquidation of investments, and nonroutine sale of property.

Revenues receipts: Additions to assets that do not incur an obligation that must be met at some future date and do not represent exchanges of property for money. Assets must be available for expenditures.

Salary: The total amount regularly paid or stipulated to be paid to an individual, before deductions, for personal services rendered while on the payroll of a business or organization.

School: A division of the school system consisting of students in one or more grade or other identifiable groups and organized to give instruction of a defined type. One school may share a building with another school or one school may be housed in several buildings.

Secondary instructional level: The general level of instruction provided for pupils in secondary schools (generally covering grades 7 through 12 or 9 through 12) and any instruction of a comparable nature and difficulty provided for adults and youth beyond the age of compulsory school attendance.

Secondary school: A school comprising any span of grades beginning with the next grade following an elementary or middle school (usually 7, 8, or 9) and ending with or below grade 12. Both junior high schools and senior high schools are included.

Senior high school: A secondary school offering the final years of high school work necessary for graduation.

Student: An individual for whom instruction is provided in an educational program under the jurisdiction of a school, school system, or other educational institution. No distinction is made between the terms "student" and "pupil," though "student" may refer to one receiving instruction at any level while "pupil" refers only to one attending school at the elementary or secondary level. The term "student" is used to include individuals at all instructional levels. A student may receive instruction in a school facility or in another location, such as at home or in a hospital. Instruction may be provided by direct student-teacher interaction or by some other approved medium such as television, radio, telephone, and correspondence.

Tax base: The collective value of objects, assets, and income components against which a tax is levied.

Total expenditure per pupil in average daily attendance: Includes all expenditures allocable to per pupil costs divided by average daily attendance. These allocable expenditures include current expenditures for regular school programs, interest on school debt, and capital outlay. Beginning in 1980–81, expenditures for State administration are excluded and expenditures for other programs (summer schools, community colleges, and private schools) are included.

Unclassified students: Students who are not candidates for a degree or other formal award, although they are taking higher education courses for credit in regular classes with other students.

Undergraduate students: Students registered at an institution of higher education who are working in a program leading to a baccalaureate or other formal award below the baccalaureate such as an associate degree.

Statistical Terms

Auto-correlation: When the error terms from different observations of the same variable are correlated. Also called serial correlation.

Confidence interval: A group of continuous or discrete statistics used to estimate a parameter and that tends to include the true value of the parameter a predetermined proportion of the time if the process of finding the group of values is repeated a number of times. Let (t_1,t_2) be the 95 percent confidence interval for the parameter b_1, then upon repeated calculation of t_1 and t_2 (using different samples), the interval (t_1,t_2) will contain b_1 95 percent of the time.

Confidence limits: The values t_1 and t_2 which form the upper and lower limits of the confidence interval.

Degrees of freedom: The number of free or linearly independent sample observations used in the calculation of a statistic.

Dependent variable: A mathematical variable whose value is determined by that of one or more other variables in a function. In regression analysis, when a random variable, y, is expressed as a function of variables, x_1, x_2, . . ., plus a stochastic term, the y is known as the 'dependent variable.'

Double exponential smoothing: A method that takes a single smoothed average component of demand and smooths it a second time so as to allow for estimation of a trend effect.

Durbin-Watson statistic: A statistic testing the independence of errors in least squares regression against the alternative of first-order serial correlation. The statistic is a simple linear transformation of the first-order serial correlation of residuals and, although its distribution is unknown, it is tested by bounding statistics which follow R. L. Anderson's distribution.

Econometrics: The quantitative examination of economic trends and relationships using statistical techniques, and the development, examination, and refinement of those techniques.

Estimate: A numerical value obtained from a statistical sample and assigned to a population parameter. The particular value yielded by an estimator in a given set of circumstances; or, the rule by which such particular values are calculated.

Estimating equation: An equation involving observed quantities and an unknown which serves to estimate the latter.

Estimation: Estimation is concerned with inference about the numerical value of unknown population values from incomplete data such as a sample. If a single figure is calculated for each unknown parameter, the process is called point estimation. If an interval is calculated within which the parameter is likely, in some sense, to lie, the process is called interval estimation.

Exogenous variable: Variables for which the values are determined outside the model but which influence the model.

Exponential smoothing: A method used in time series to smooth or to predict a series. There are various forms, but all are based on the supposition that more remote history has less importance than more recent history.

Ex-ante forecast: The forecasting of unknown values.

Ex-post forecast: The forecasting of known values.

First-order serial correlation: When errors in one time period are correlated directly with errors in the ensuing time period. Also called auto-correlation.

Forecast: An estimate of the future based on rational study and analysis of available pertinent data, as opposed to subjective prediction.

Forecasting: Assessing the magnitude which a quantity will assume at some future point of time: as distinct from 'estimation' which attempts to assess the magnitude of an already existent quantity.

Forecast horizon: The number of time periods into the future which are forecasted. Forecasts for next year are said to have a 1-year forecast horizon.

Function: A mathematical correspondence that assigns exactly one element of one set to each element of the same or another set. A variable that depends on and varies with another.

Functional form: A mathematical statement of the relationship among the variables in a model.

Independent variable: In regression analysis, when a random variable, y, is expressed as a function of variables, x_1 , x_2 , ..., plus a stochastic term, the x's are known as 'independent variables.'

Lag: An event occurring at time $t + k$ $(k>0)$ is said to lag behind an event occurring at time t, the extent of the lag being k. An event occurring k time periods before another may be regarded as having a negative lag.

Maximum likelihood estimation: A method of estimating a parameter or parameters of a population by that value (or values) which maximizes (or maximize) the likelihood of a sample.

Mean absolute percentage error (MAPE): The average value of the absolute value of errors expressed in percentage terms.

Model: A system of postulates, data, and inferences presented as a mathematical description of a phenomenon such as an actual system or process. The actual phenomenon is represented by the model in order to explain it, to predict it, and to control it.

Ordinary least squares (OLS): The estimator which minimizes the sum of squared residuals.

Parameter: An arbitrary constant whose value characterizes a member of a system. A quantity that describes a statistical population.

Projection: In relation to a time series, an estimate of future values based on a current trend.

R^2: The coefficient of determination; the square of the correlation coefficient between the dependent variable and its OLS estimate.

$\bar{R}^2$ (also called the adjusted R^2): The coefficient of determination adjusted for the degrees of freedom.

Regression analysis: Regression analysis is a statistical technique for investigating and modeling the relationship between variables.

Rho: A measure of the correlation coefficient between errors in time period t and time period t-1.

Serial correlation: When the error terms from different observations are correlated. Also called auto-correlation.

Time series: A time series is a set of ordered observations on a quantitative characteristic of an individual or collective phenomenon taken at different points of time. Usually the observations are successive and equally spaced in time.

Time series analysis: The branch of quantitative forecasting where data for one variable are examined for patterns of trend, seasonality, and cycle.

Variable: A quantity that may assume any one of a set of values.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1988— 2 2 3 - 1 0 8 / 0

United States
Department of Education
Washington, DC 20208-5650

Official Business
Penalty for Private Use, $300

Postage and Fees Paid
U.S. Department of Education
[illegible]

Fourth Class